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JOB SATISFACTION AND CAREER INTENT
OF USAF WEAPONS SYSTEMS SECURITY
SPECIALISTS

Ronald R. Newsom, 1Lt, USAF

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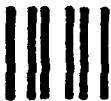
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The objectives of this research were to rank job factors in order of impact on USAF Weapons Systems Security Specialist job satisfaction and career intent, and to analyze trends in WSS job satisfaction and career intent. WSS responses to the 1975 and 1977 Quality of Air Force Life surveys and to a supplemental survey formed the data base. Twelve job factors from the QOAFL surveys were analyzed; the supplemental survey included eighteen job factors. Pearson correlation, factor analysis, multiple regression, analysis of variance, and the T-test of means were used to analyze the data. Results indicate job challenge has the most impact on WSS job satisfaction, while equity has greatest impact on career intent. WSS job satisfaction, career intent, and satisfaction with recognition, job freedom, prestige, and pay significantly decreased from 1977 to 1981; satisfaction with leadership significantly increased from 1975 to 1981.

JOB SATISFACTION AND CAREER INTENT OF

USAF WEAPONS SYSTEMS SECURITY SPECIALISTS

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

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In Partial Fulfillment of the Requirement for the

Degree of Master of Science in Systems Management

By

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This thesis represents a year of research in the area of job satisfaction and career intent of USAF Weapons Systems Security Specialists (AFSC 811X0). Hopefully, the fruits of my labor will surpass mere satisfaction of one of the requirements for the degree of Master of Science.

Research efforts of this nature generally have a sort of utility half-life. Anyone who has questions or comments about this research may feel free to contact me at HQ TAC/SP, Langley AFB, Virginia, where I will be stationed for the next three years. I shall retain the mounds of computer printouts, the original set of 215 completed supplemental survey questionnaires, and the card decks of raw data in case they become relevant to future research done by myself or by others.

Several key people contributed immeasurably to this study. A great deal of thanks is due my Thesis Advisor, Lt Col Edward J. Dunne, Jr., who guided the effort from start to finish and who, along with Lt Col Charles McNichols, my Thesis Reader, taught me a lot about how to do research. Lastly, my wife and typist, Dolores, and son, James Robert, are due credit for their unending support and patience throughout the AFIT experience.

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CHAPTER 1

INTRODUCTION

United States Air Force Weapons Systems Security (WSS)
Specialists comprise the largest branch of the Security
Police career field (approximately sixty-five percent) and
have the task of safeguarding all USAF weapons systems against
hostile action (9:7). This overall mission leads to specific
responsibilities such as Restricted Area boundary and access
control, routine security patrol, and emergency response to
possible, probable, or known attacks against USAF priority
resources (20:p.1-1).

As with virtually any other job in military service
or in civilian life, WSS Specialists are subjected to a num-
ber of specific job factors which may influence overall
levels of job satisfaction and career intent; job factors can
motivate individuals to seek alternate employment or can
cause them to not perform commensurate with their abilities
(1:216-20; 17:177-81). This thesis investigates the relation-
ships of various job factors to job satisfaction and career
intent. Intuitively, individuals not satisfied with factors
such as work schedule, work facilities, and recognition are
more likely to seek alternate employment than are individuals
satisfied with those same factors.

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Job Satisfaction and Career Intent Defined

Herein, the terms "job satisfaction" and "career intent" take on their classical meanings. Albanese states that a conceptual approach to job satisfaction is to "compare a person's perceived needs or expectations with the person's perceived outcomes from working [1:287]." Similarly, Thompson defines job satisfaction as a "measure of an individual's perception of how well his needs are met by his job and its related environment [18:12]." Job satisfaction of a WSS Specialist, then, is a measure of how well his individual needs are met by his WSS job. Since job satisfaction also involves the "related environment," job satisfaction of a WSS Specialist is also influenced by how well membership in the USAF meets his individual needs.

"Career Intent" is a measure of an individual's desire to continue in a particular job. A WSS Specialist with a high level of career intent is one who strongly desires or expects to continue working as a WSS Specialist in the future. More specifically, a WSS Specialist's career intent, in the context of this thesis, is determined by whether the individual expects to remain in the USAF until reaching at least twenty years of service.

One issue surrounding job satisfaction and career intent is the question of measurement. How can such concepts be accurately measured or quantified so that rigid mathematical analysis may be conducted with meaning? Typically,

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these concepts are measured with survey questions designed so that responses are located on an _interval scale_ or on an _ordinal scale_.

Use of an interval scale, often called "cardinal measurement," _divides_ the concept into evenly-spaced intervals (7:519). A number is then assigned to each point on the interval scale, providing the basis for statistical analysis.

If an interval scale is not or cannot be used, an ordinal scale is used to measure a concept. This method of measurement, less preferable than the interval scale, merely gives a "relationship of order" (7:519). Distances between points on an ordinal scale are either unknown or meaningless. In studies of difficult-to-measure concepts such as job satisfaction and career intent, equidistance between points on an ordinal scale is generally _assumed_, and numbers are assigned to each point just as numbers are assigned to points on an interval scale (8:34-38; 18:33-34).

Appendix A contains examples of survey questions with ordinal and interval scaled responses. Questions nineteen through thirty-six all have assumed interval scale responses, and questions ten through twelve and fourteen through eighteen all have ordinal scale responses. The survey in Appendix A was used to supplement historical WSS job satisfaction and career intent data with current data, and is discussed in detail in the next section.

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Background of the Data Base

Historical WSS job satisfaction and career intent data were collected via three Quality of Air Force Life (QOAFL) surveys, conducted in 1975, 1977, and 1980. In addition to questions on job satisfaction and career intent, questions about various job factors appeared on each of the three surveys; the specific job factors included in the surveys are presented later in detail.

In 1975, 179 WSS Specialists responded to the QOAFL survey, and 151 WSS Specialists responded to the 1977 QOAFL survey. The WSS cases were selected from master data files by screening three questions on the surveys which ascertained the first three digits of the respondent's AFSC. Prior to 1977, the third digit in a Security Policeman's AFSC indicated the branch of the career field to which he was assigned: a "1" indicated the Weapons Systems Security branch, and a "2" indicated the Law Enforcement (LE) branch (13:v). As of 1 October 1977, however, the Security Police enlisted AFSC was changed so that the last digit differentiated between Law Enforcement and Weapons Systems Security; "811x0" currently signifies a WSS Specialist, and "811x2" signifies an LE Specialist (19). Fortunately, the 1977 QOAFL was administered during May and June of 1977, allowing separation of WSS responses, but it is impossible to distinguish which 1980 QOAFL respondents were assigned to WSS and which were assigned to LE (14:xi). The 1980 QOAFL data was there-

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fore excluded from the data base, and only WSS responses to the 1975 and 1977 QOAFL surveys were analyzed.

The third part of the data base for this study is composed of WSS Specialist responses to a supplemental questionnaire. The supplemental survey was conducted to collect current (1981) data which is more descriptive of the WSS branch of the Security Police career field. The questionnaire contains job satisfaction and career intent questions identical to those on the QOAFL surveys, and includes questions on many job factors, some of which are unique to Weapons Systems Security. Two hundred fifteen WSS Specialists participated in the survey, and the questionnaire is presented in Appendix A.

Five CONUS USAF bases participated in the supplemental survey. Only SAC and TAC bases were requested to participate because WSS manning in those two MAJCOMs represents approximately three-fourths of all WSS Specialists assigned within the CONUS (9:7). The five bases which participated in the survey were

        1) Barksdale AFB, LA   (SAC)
        2) Davis-Monthan AFB, AZ   (TAC)
        3) F.E. Warren AFB, WY   (SAC)
        4) Seymour-Johnson AFB, NC   (TAC)
        5) Grand Forks AFB, ND   (SAC)

The geographic "scattering" of these five bases across the United States helped to prevent bias of the survey results by factors such as climate, cost of living, and local population attitudes. In addition, the number of bases

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facilitated "smoothing out" the effect of organizational
climates. Some Security Police squadrons probably have better
or worse working conditions or interpersonal relationships
caused by mere differences in unit commanders, key supervisors,
or local policies. If only one or two bases had been surveyed,
the possibility of bias due to local organizational climate
would have been greater.

Purpose of the Study

The purpose of this study was to statistically analyze
existing data and data collected by a supplemental survey (i)
to determine which job factors have significant impact on the
overall levels of job satisfaction and career intent of USAF
WSS Specialists; and (ii) to evaluate trends in WSS job
satisfaction and career intent over the past six years.

Insofar as most decisions having long-range impact
on WSS job satisfaction and career intent are made at the
MAJCOM Security Police staff level or above, the results of
this study are probably most useful to senior Security Police
staff members. Making decisions with knowledge of specifi-
cally which job factors have shown to most significantly
affect job satisfaction and career intent is certainly better
than acting only with opinions or with no knowledge of how
job factors impact the career field. Decisions on matters
seemingly unrelated to the topics of job satisfaction and
career intent may indeed impact those areas, even if

indirectly. Information herein may enable decision makers to estimate the impact of such decisions on job satisfaction and career intent.

Information on trends within the WSS branch of the Security Police career field is also probably most useful to senior Security Police staff members. Trends indicate improvement or digression in areas of interest, and can identify problems which, if unchecked, could lead to serious consequences. Further, comparison of trends against past decisions can identify actions which had favorable or unfavorable impact on the area of interest.

Related Research

A literature search was conducted to identify past research related to Security Police job satisfaction and career intent. No reports dealing exclusively with WSS Specialist job satisfaction and career intent were found, but many works provided background information on the subject and helped to bring overall research questions into focus. Four major related works are summarized in following pages.

(1) "Security Police Shift Work: Is There a Better Way?" This Air Command and Staff College essay was written by Captain Terry S. Robinson in 1976. The paper investigates the issue of rotating shifts for workers within the SP career field. Problems connected with various shift schedules are identified, and the issue of using experience level as a

factor in deciding work schedule is thoroughly discussed.
One other main issue which is addressed is the question of
whether workers should participate in determining their own
work schedule. The author concludes that the participative
decision-making process should succeed in the area of
deciding work schedules, and advocates a well-managed
rotation system rather than a "permanent shift" system
(15:54). The rotation of shifts, however, should not take
place frequently (for example, not more than once per month),
because of physiological stress (15:25).

Work schedule could impact the job satisfaction of
many WSS Specialists. The key point from this report is that
individuals undergo physiological stress (which can impact
performance) when a drastic change occurs in work schedule
(3:1059-70; 15:20-25).

(2) "Security Police Career Ladders: AFSCs 811x0/A,
811x2/A, 81199, and CEM Code 81100." This occupational
survey of the SP career field was completed in 1979 by the
Occupational Survey Branch of the USAF Occupational Center.
For each job description in AFR 39-1, workers were surveyed
to determine functional job structure, the relationship of
skill level groupings to current job structure and to
AFR 39-1 job descriptions, jobs performed by first-term
enlistees, CONUS versus overseas and MAJCOM differences,
and job satisfaction and related data (9:5).

The report gives a detailed analysis of the responders from each job description in the SP field, examines the relative difficulties of tasks performed by individuals with different skill levels, and lists those tasks which receive high training emphasis in the field. The report concludes that

   i) AFR 39-1 job descriptions of each career ladder are accurate descriptions of the functions performed (9:33);

   ii) the difficulty of tasks performed properly match individual skill level (9:33);

   iii) personnel in the WSS ladder perceive that their training is well utilized, but do not find their jobs as interesting and do not feel their jobs utilize their talents as well as do Law Enforcement Specialists (9:33).

   The relevant portions of this report are the results of analysis of data supplied by WSS responders, and the section on job satisfaction. The report shows that WSS job satisfaction is the lowest of any branch of the career field (9:29-31). This fact is not surprising, but it _is_ of major concern since the WSS branch of the career field is by far the largest; at the time of this report, of 33,078 Security Policemen in the Air Force, 21,272 were WSS Specialists (9:7).

   (3) "United States Air Force Security Police Job Satisfaction and Career Intent: 1975 Versus 1977." Captain Peter E. King wrote this unpublished master's thesis while

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a student in the AFIT Graduate Systems Management program in 1978. His work is perhaps the most relevant to this effort. Captain King compared and contrasted the SP responses to the 1975 and 1977 Quality of Air Force Life (QOAFL) surveys. The problems addressed by King were that (i) the variables associated with SP job satisfaction and career intent had not been statistically determined, and (ii) there had been no comparison of 1975 and 1977 QOAFL SP responses to determine the changes that occured in SP attitudes and perceptions (8:11).

After comparing the two QOAFL surveys and selecting the questions which remained essentially unchanged for both the 1975 and 1977 versions, King conducted an in-depth statistical analysis of the SP responses, using the Automatic Interaction Detection (AID) algorithm, the student's T-test, multiple regression analysis, and principal-component analysis (8:38-45).

On the basis of the statistical analysis, King concludes that, although the levels of job satisfaction and career intent remained essentially unchanged between 1975 and 1977, there was an increase in the overall quality of the SP field, as evidenced by higher education levels, increased perceived autonomy, and an increase in the desire for greater responsibility (8:90). These improvements, however, were offset by economic and perceived equity

factors (in military versus civilian life), resulting in zero net changes in job satisfaction and career intent (8:91).

An important note is that the analysis performed by King includes all Security Police responses, regardless of career ladder and rank (8:13). The analysis reported in following chapters includes only enlisted WSS Specialist survey responses.

(4) "Security Police Job Enrichment: An Anthology of Management Effort and Research." Another 1978 AFIT Systems Management student, Captain Michael D. Griffith, wrote this master's thesis. The report presents an extensive review of theories concerning motivation, job enrichment, and job redesign, such as Herzberg's two-factor theory, Expectancy theory, and the Hackman-Oldham model of job enrichment (6:ix). In light of these theories, Griffith presents several studies which have been done within the SP field with respect to job satisfaction. Among these studies are the Castle AFB Security test, the Ellsworth AFB job enrichment project, and the Minot AFB local job satisfaction project.

The Castle AFB test investigated the need for foot sentries, commonly thought to be the most boring and unchallenging of all WSS duties (6:77). Volunteer WSS Specialists were structured into various security configurations (on foot versus in vehicles, etc.) and were "attacked"

by other volunteer WSS Specialists who had received special training in terrorist tactics (6:80). Ratings were assigned by judges who observed each attack-exercise scenario. Analysis of the ratings indicated that foot sentries were most effective in defending against an attack, primarily because of their immediate response capability (6:82-83). Vehicularized patrols had to drive to the resource, deploy from the vehicle, and position themselves between the attackers and the resource, whereas foot sentries, required to remain within fifteen to twenty-five feet of a resource, merely had to run a few steps to position themselves properly. Largely as a result of this test, foot sentries remain the backbone of Aircraft Security (6:83).

The Ellsworth job enrichment project was a well-designed study of the possible benefit of job enrichment in a Security Police organization (6:87). Suggestions for changes within the organization were solicited from organization members. After initial collection of data using the Hackman-Oldham Job Diagnostic Survey (JDS), standboard scores, and absentee figures, a number of the proposed changes were implemented (6:89-93). After a period of several months, the same methods were used to collect final data (6:95). Statistical analysis of the data, performed as part of a PhD research effort by William Rosenbach, indicated that the implemented changes did have an impact on perceived

autonomy and absenteeism; for individuals with a high Growth Need Strength (GNS), there was a statistically significant increase in job satisfaction (6:112).

The Minot AFB job satisfaction project was a local effort to improve job satisfaction of personnel assigned to the 91st Security Police Group (6:118). A study group was formed which designed and administered surveys to 91st SPG members. Based on the survey results, experience, and judgement, the study group pinpointed several sources of discontent for organization members. The sources identified were unfavorable work schedules, unprotected time off, poor scheduling of training and appointments, low degrees of job challenge (primarily for Aircraft Security), and lack of recognition (6:123-24).

Once these evaluations were made, an action group was organized within the 91st SPG. The action group implemented changes within the organization based on the study group's recommendations (6:125-26). Most of the changes involved scheduling of work time, training time, and appointments (6:126). A few minor changes were made to increase recognition and autonomy. Unfortunately, no follow-up study was done to evaluate the effectiveness of the implemented changes, but individuals who held key supervisory positions within the 91st SPG during the program stated that the program was successful (6:127-28).

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Griffith's thesis is relevant to this research in two respects. First, the report indicates that there has been widespread interest in increasing the job satisfaction level of Security Policemen. Second, previous studies have suggested reasonably consistent lists of sources of discontent for Security Policemen.

Summary

This chapter introduces the topic of this research, defines key terms, presents the data base, states the purpose of the study, and identifies related research.

The topic, WSS job satisfaction and career intent, has not been specifically addressed in previous works, and the data base (consisting of historic QOAFL data and current supplemental survey data) provides a means for conducting in-depth analysis of the subject. The purpose of the analysis is to determine which job factors impact WSS job satisfaction and career intent, and to evaluate trends in those areas since 1975.

Related works provide many key facts which help to establish a basis for further research. These facts, coupled with the methodology presented in the next chapter, relates specifically how the objectives of this research were accomplished.

CHAPTER 2

METHODOLOGY

The purpose of this chapter is to present an overall
statement of the problem studied, to outline specific objec-
tives of the research, to state limitations and assumptions,
and to outline methods used to analyze the data. The four
reports discussed in the previous chapter, coupled with per-
sonal experience in the SP field, lead to formulation of the
specific problem examined in this research.

Statement of the Problem

As a Security Police shift commander at Langley AFB,
Virginia, from August 1978 until February 1980, I was exposed
to almost 300 WSS Specialists, and supervised approximately
seventy WSS Specialists. Nearly all WSS Specialists voiced
dissatisfaction with some aspect or event associated with
their job, with the SP career field, or with the Air Force
in general. First-term WSS enlistees seemed particularly
dissatisfied with their jobs, and expressed a desire to
change jobs within the Air Force or to separate from the
service. In isolated cases, these desires became so intense
that the individual developed severe disciplinary or mental
health problems.

The literature review suggests that several attempts have been made over previous years to enumerate sources of dissatisfaction for Security Policemen. However, though the majority of Security Policemen are WSS Specialists, there has been no attempt to enumerate and rank-order specific job factors which impact the job satisfaction and career intent of WSS Specialists only. In addition, trends in WSS job satisfaction and career intent for the past six years are not known. Readily available data such as WSS Specialist responses to the 1975 and 1977 QOAFL surveys has not been fully analyzed to determine these unknowns.

In short, the factors which impact job satisfaction and career intent of WSS Specialists, the relative importance of those factors, and the trends in WSS job satisfaction and career intent over the past six years has not been statistically determined.

Objectives

The overall objectives of this research were to statistically analyze historical data and supplemental data to determine which job factors impact job satisfaction and career intent of WSS Specialists, and to evaluate trends in WSS job satisfaction and career intent. In accordance with the overall objectives, specific sub-objectives were to

(1) Administer a carefully designed and pretested survey instrument to a sample of approximately 250 WSS Specialists stationed within the CONUS.

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(2) Use Pearson correlation, factor analysis, and multiple linear regression to determine, for each of the data groups (1975, 1977, and 1981), which job factors significantly impact WSS job satisfaction and career intent.

(3) Use analysis of variance and the T-test of means to evaluate trends in WSS job satisfaction, career intent, and job factors common to the QOAFL and supplemental surveys from 1975-1981.

Limitations and Assumptions

The primary limitation of this research is that only enlisted Weapons Systems Security Specialist survey responses were included in the analysis. The results of the analysis can <u>not</u> be extrapolated to the entire Security Police career field. In addition, the supplemental survey data were collected from enlisted WSS Specialists assigned to operational flight security duty at SAC and TAC bases in the CONUS. WSS Specialists in administrative and staff duties were excluded from the supplemental survey because of significant differences in flight security duty and WSS administrative and staff duties. Therefore, some of the statistical differences between the QOAFL data and the supplemental survey data may be attributable to the fact that QOAFL data includes responses of WSS Specialists in administrative and staff jobs.

Another limitation of this research is that the historical data is not as detailed or customized to the WSS

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branch of the Security Police career field as the supplemental survey data. Questions in the QOAFL surveys remained generally applicable to all USAF career fields, while the supplemental survey includes questions about factors which do not, in general, apply to other career fields.

The major assumption of this research is that the survey instruments used to collect the data base were reliable; that the questions actually measured what they were intended to measure. A second assumption is that all survey respondents indicated their true feelings when answering questions. These first two assumptions typically underlie research efforts of this nature.

The third assumption is that the answers to all survey questions with ordinal responses can be assigned numerical values as if they were interval responses. This assumption was discussed in Chapter 1.

The final assumption involves the relationship of sample size and confidence in results. If the population of enlisted WSS Specialists is normally distributed along dimensions measured by the surveys, then the following relationship between confidence and sample size exists (7:253-54).

$$Z_{\alpha/2} = \sqrt{n} \, \frac{D}{\sigma}$$

where: α represents the level of confidence (z is a number corresponding to α on the normal distribution table);

D represents the absolute difference between the true value of the parameter, θ, and the estimate of the parameter, $\hat{\theta}$: $D=|\theta-\hat{\theta}|$;

σ represents the population standard deviation; and

n represents the sample size.

In later evaluation of confidence levels for various results, sample standard deviation is used as an estimate of the population standard deviation, since the latter is unknown. The above relationship, however, reflects the intuitive reasoning that as sample size increases, confidence in results increases. It is assumed that ensuing levels of confidence are sufficiently high to provide useful information to decision makers.

Formation of Indices

Review of the QOAFL surveys indicated that questions on numerous job factors appeared on each of the 1975 and 1977 versions, allowing comparisons between year groups. Specifically, twelve job factors were included in both QOAFL surveys. Following is a list of the job factors and definitions. Definitions for the first eight factors appeared on the QOAFL survey instruments.

Economic Security: Guaranteed employment; retirement benefits; insurance; protection for self and family.

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Free Time: Amount, use, and scheduling of free time alone, or in voluntary association with others; variety of activities engaged in.

Work Satisfaction: Doing work that is personally meaningful and important; pride in my work; job satisfaction; recognition for my efforts and my accomplishments on the job.

Leadership/Supervision: Supervisor has one's interests and those of the Air Force at heart; keeps one informed; approachable and helpful rather than critical; good knowledge of the job.

Equity: Equal opportunity in the Air Force; a fair chance at promotion; an even break in job/assignment selection.

Personal Growth: To be able to develop individual capacities; education/training; making full use of one's abilities; the chance to further one's potential.

Economic Standard: Satisfaction of basic human needs such as food, shelter, clothing; the ability to maintain an acceptable standard of living.

Personal Standing: To be treated with respect; prestige; dignity; reputation; status.

Job Freedom: Autonomy on the job; freedom to make decisions and to use personal judgement on job-related matters.

Feedback: Flow of information from supervisor on job performance; knowledge of having performed satisfactorily or unsatisfactorily, and identification of ways to improve performance.

Recognition: Acknowledgement from supervisor that a job was well done; recognition for efforts and accomplishments on the job.

Job Challenge: The degree to which a job forces one to work commensurate with one's abilities; the requirement to use individual capacity and to put forth effort to accomplish tasks.

Using QOAFL survey questions on job satisfaction, career intent, and the above twelve job factors, indices were formed for each "variable." The indices were calculated by summing numerical values assigned to responses of related questions. For example, the job satisfaction index was formed (for each individual survey respondent) by adding the numerical values assigned to the responses to the four questions pertaining to job satisfaction. The job satisfaction questions are listed below, and the numerical value assigned to each response is shown in parentheses. The complete list of selected questions from the 1975 and 1977 QOAFL surveys is shown in Appendix B.

1. Which of the following shows how much of the time you feel satisfied with your job?

   (7) A. All of the time
   (6) B. Most of the time
   (5) C. A good deal of the time
   (4) D. About half of the time
   (3) E. Occasionally
   (2) F. Seldom
   (1) G. Never

2. Choose one of the following statements which best tells how well you like your job.

   (1) A. I hate it
   (2) B. I dislike it
   (3) C. I don't like it
   (4) D. I am indifferent to it
   (5) E. I like it
   (6) F. I am enthusiastic about it
   (7) G. I love it

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3. Which of the following best tells how you feel about changing your job?

    (1) A. I would quit this job at once if I could
    (2) B. I would take almost any other job in which I could earn as much as I am earning now
    (3) C. I would like to exchange both my job and my occupation
    (4) D. I would like to exchange my job for another one within this career field
    (5) E. I am not eager to exchange my job, but I would do so if I could get a better job
    (6) F. I cannot think of any jobs for which I would exchange the job I have
    (7) G. I would not exchange my job for any other

4. Which of the following shows how you think you compare with other people?

    (7) A. No one likes his job better than I like mine
    (6) B. I like my job much better than most people like theirs
    (5) C. I like my job better than most people like theirs
    (4) D. I like my job about as well as most people like theirs
    (3) E. I dislike my job more than most people dislike theirs
    (2) F. I dislike my job much more than most people dislike theirs
    (1) G. No one dislikes his job more than I dislike mine

Thus, if an individual coded answers C,E,D,D, respectively, for the above questions, his job satisfaction index would be 5 + 5 + 4 + 4 = 18. Maximum job satisfaction is indicated by responses A,G,G,A to the above questions, resulting in a maximum index value of 7 + 7 + 7 + 7 = 28. Alternately, minimum job satisfaction is indicated by responses G,A,A,G, resulting in a minimum index value of 1 + 1 + 1 + 1 = 4.

The job satisfaction index for an individual, therefore, must be an integer between four and twenty-eight, inclusive. Other indices were computed in a similar manner, but due to varying numbers of responses and questions related to the variables, the range of possible index values varies. Table 2.1 lists the variables, relevant question numbers on each of the QOAFL surveys, and the range of possible index values.

TABLE 2.1

Formation of Indices

INDEX	RELEVANT QOAFL QUESTIONS 1975	1977	INDEX RANGE
Job Satisfaction	65-68	57-60	4-28
Career Intent	11	14	1-5
Economic Security	21	23	1-7
Economic Standard	19	21	1-7
Work Satisfaction	61	56	1-7
Free Time	37	52	1-7
Leadership/Supervision	78,79	88,90	2-12
Equity	110,117	137,138	2-12
Personal Growth	123	144	1-7
Personal Standing	131	153	1-7
Job Freedom	81	135	1-5
Feedback	127,128	131,132	2-10
Recognition	82	133	1-5
Job Challenge	62	68	1-5

Pearson Correlation Coefficients

For each version of the QOAFL survey, Pearson product-moment correlation coefficients were computed (i) for

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job satisfaction with each of the twelve job factors, and (ii) for career intent with each of the twelve job factors. The Pearson correlation coefficient for two variables is computed by dividing the sample covariance by the product of the standard deviations (7:395). If "r" represents the Pearson correlation coefficient, the mathematical expression is

$$r = \frac{s_{xy}}{s_x s_y} = \frac{\frac{1}{n-1}\Sigma (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\frac{1}{n-1}\Sigma (x_i - \bar{x})^2}\sqrt{\frac{1}{n-1}\Sigma (y_i - \bar{y})^2}}$$

where: s_{xy} = sample covariance of variables x and y

s_x, s_y = sample standard deviations of variables x and y respectively

n = number of observations

The value of r can range from -1 to +1. The extreme values, -1 and +1, indicate perfect negative correlation and perfect positive correlation, respectively. An r-value of zero indicates that the variables are not related. Qualitative data plots and corresponding r-values illustrate the extremes in Figure 2.1.
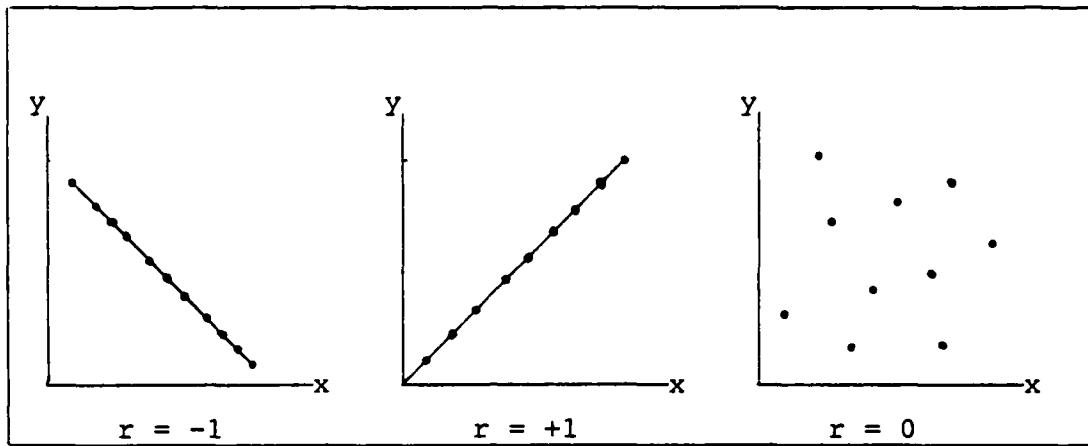
FIGURE 2.1. Extreme Values of Pearson
Correlation Coefficient

The Pearson correlation coefficients computed for each
of the twelve job factors with job satisfaction and career
intent were rank-ordered from most correlated to least
correlated. The results suggest which job factors have more
impact on WSS job satisfaction and career intent.

Finally, Pearson correlation was used to investigate
relationships between questions used to form the multi-
question indices: job satisfaction, equity, leadership/
supervision, and feedback. Questions which measure the
same factor should be at least moderately correlated (the
r-value should at least equal approximately .3). A
correlation coefficient close to zero would indicate that
the questions possibly do not measure the same factor, and
should not be combined to form a single index.

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Factor Analysis

Factor analysis is a statistical tool for analyzing
many likely correlated variables. Overall, factor analysis
"examines" input variables (called "manifestation variables")
to determine underlying dimensions in the data base (11:p.6-2).
The results of factor analysis often enable a researcher to
group a number of manifestation variables into a smaller
number of subsets of variables. Each subset represents a
dimension of the data base. For example, several questions
on a survey instrument may relate to a particular concept,
such as career goals. Factor analysis can reveal that those
questions measure the same dimension: the career goals
dimension. Some dimensions underlying a data base may not
be easily recognized, but can be identified through factor
analysis.

The mathematical treatment of the input data base
during factor analysis is quite rigid. Briefly, a matrix
including the observations of all manifestation variables
is formed. A series of matrix operations is performed to
produce the factor structure, a matrix presenting the
correlation between each manifestation variable and each
retained factor (11:p.6-26). If the analysis is successful,
each manifestation variable will appear highly correlated
with a single underlying factor, and the number of retained
factors will be significantly less than the number of
manifestation variables.

Factor analysis was applied to each subfile (yeargroups 1975, 1977, and 1981) of the data base to identify groups of indices which tend to vary together. Review of the groups of job indices made it possible to name the underlying dimensions of each subfile. Information from the factor analysis was an important input to the next research step: multiple linear regression.

Multiple Linear Regression

Multiple linear regression, essentially a statistical curve-fitting technique, involves construction of a relationship or combination of independent variables which describes the behavior of a dependent variable. The dependent variables in this research were the job satisfaction and career intent indices. The independent variables were the dimensions indicated by factor analysis. In other sets of regression equations, the job factors in original form were used as independent variables.

In multiple linear regression, independent variables which explain part of the variance of the dependent variable are included in the regression equation. Normally, those variables which explain the most variance are selected first, and additional independent variables are selected until further computation is meaningless (12:345). The resulting set of independent variables included in the regression equation are called "predictor variables." If the predictor

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variables are not correlated, the order of inclusion in the
regression equation can be interpreted as a rank-ordering
of importance. The predictor variable selected to enter the
regression equation first is the most important variable,
since it has the most impact on the dependent variable. The
second predictor variable in the equation is second most
important, and so forth. Independent variables not included
in the regression equation do not significantly impact the
dependent variable, and are not important for prediction.
These conclusions are valid for forward stepwise multiple
linear regression, used in this research.

Analysis of Variance

Another statistical analysis technique used in this
research, analysis of variance, is a method of "estimating
how much of the total variation in a set of data can be
attributed to certain assignable causes of variation and how
much can be attributed to chance [7:486]." Analysis of
variance involves comparing groups (called "treatments")
to determine whether significant differences exist along
certain dimensions (dependent variables). In this research
application, analysis of variance was important in identifying
trends.

An advantage of analysis of variance is that two or
more treatments, such as yeargroup and MAJCOM, can be
considered simultaneously. Analysis of variance was used in

this research to determine (i) whether job satisfaction and career intent levels significantly changed from 1975 to 1981; and (ii) whether WSS Specialists of different grade, MAJCOM, or race significantly differed in job satisfaction or career intent.

A limitation of analysis of variance is that specific levels of treatment are not identified as being significantly different from other levels; analysis of variance can only lead to the conclusion that significant differences do or do not exist between at least two different treatment levels. Identification of specific pairs of levels which significantly differ requires an additional statistical tool, the T-test of means.

T-test of Means

The T-test of means is used to test whether significant differences exist between two samples. Three possible alternatives are associated with the parameter means of two samples: either the mean of the first sample is significantly greater than the second sample, significantly less than the second sample, or is not significantly different from the parameter mean of the second sample. The T-test of means identifies which of these alternatives is most accurate, based on the level of risk (α) that the researcher is willing to accept. As the level of risk decreases, more absolute difference in the parameter means

of the two samples is required for evidence to suggest one
sample mean is significantly higher or lower than the other
sample mean (assuming sample sizes remain constant).

A disadvantage of the T-test of means is that as the
number of samples collected increases, comparison between all
pairs of samples becomes more tedious. Application of the
T-test of means in this research is restricted to comparing
the three yeargroup job satisfaction means, career intent
means, and the means of six job factors common to the QOAFL
and supplemental surveys.

Summary

This chapter outlines the specific problem studied,
the objectives of the research, limitations and assumptions,
and presents the statistical tools used in the analysis.
Where needed in later chapters, more detail concerning the
statistical tools is presented. The following three chapters
present the results of analysis of the data base composed of
WSS Specialist responses to the 1975 and 1977 QOAFL surveys,
and to a supplemental survey conducted during June, 1981.

CHAPTER 3

QOAFL DATA ANALYSIS

The purpose of this chapter is to present the results
of analysis of WSS Specialist responses to the 1975 and 1977
Quality of Air Force Life surveys. As stated in the last
chapter, Pearson correlation, factor analysis, and multiple
linear regression were the statistical tools used to help
draw conclusions concerning the relative importance of the
twelve job factors common to both surveys. The specific
questions which appeared on the survey instruments are listed
in Appendix B.

Tables 3.1 through 3.5 describe the overall data
base by showing frequency distributions (by yeargroup) for
important demographic factors: grade, MAJCOM, years of
service, race, and educational level. Tables 3.6 and 3.7
present the means, standard deviations, and scale ranges for
the indices computed from the 1975 and 1977 responses. There
were 179 cases in the 1975 yeargroup, and 151 cases in the
1977 yeargroup. The following abbreviations are used in
Table 3.6, Table 3.7, and elsewhere throughout the chapter:

        JSAT   = Job Satisfaction
        CI   = Career Intent
        WKSAT   = Work Satisfaction
        CHAL   = Job Challenge
        LDSAT   = Leadership Satisfaction

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GRWTH  =  Personal Growth and Development Opportunities
PREST  =  Prestige
JBFM   =  Job Freedom
EQTY   =  Equity
RECOG  =  Recognition
FRTM   =  Satisfaction with Free Time
FDBAK  =  Feedback
ECSTD  =  Economic Standard Satisfaction
ECSEC  =  Economic Security Satisfaction
```

Also listed in Tables 3.6 and 3.7 are ninety-five percent
confidence intervals for the true means of the indices; the
intervals were computed using the relationship presented in
Chapter 5. It may be stated with ninety-five percent
certainty that the true values of the indices lie within the
upper and lower limits of the intervals. The sample means
are the best estimates (most likely values) for the
population means.

The demographic distributions of Tables 3.1 through
3.5 indicate that the 1977 data is skewed relative to the
1975 data. Sixteen and one-half percent of the 1977
respondents were Master Sergeants or above, compared to 5.7
percent Master Sergeants or above in 1975. Seventy-six and
one-tenth percent of the 1977 respondents were white,
compared to 71.5 percent white in 1975. Education level is
also skewed. Only 1.3 percent of the 1977 respondents were
not high school graduates, compared to 7.3 percent in 1975.
Also, 1977 data reflects 4 percent college graduates,
compared to none in 1975.

TABLE 3.1

QOAFL Frequency Distribution by Grade

CATEGORY	1975		1977	
	n	RELATIVE FREQUENCY (%)	n	RELATIVE FREQUENCY (%)
AB	3	1.7	0	0.0
AMN	16	8.9	10	6.6
A1C	57	31.8	46	30.5
SGT	48	26.8	32	21.2
SSGT	25	14.0	21	13.9
TSGT	16	8.9	16	10.6
MSGT	9	5.1	11	7.3
SMSGT	0	0.0	7	4.6
CMSGT	1	.6	7	4.6
MISSING	4	2.2	1	.7
TOTALS	179	100.0	151	100.0

TABLE 3.2

QOAFL Frequency Distribution by MAJCOM

CATEGORY	1975		1977	
	n	RELATIVE FREQUENCY (%)	n	RELATIVE FREQUENCY (%)
MAC	13	7.3	12	7.9
SAC	86	48.0	59	39.1
TAC	16	8.9	24	15.9
OTHER	64	35.8	55	36.4
MISSING	0	0.0	1	.7
TOTALS	179	100.0	151	100.0

TABLE 3.3

QOAFL Frequency Distribution by Years of Service

CATEGORY	1975		1977	
	n	RELATIVE FREQUENCY (%)	n	RELATIVE FREQUENCY (%)
0-4 years	110	61.4	79	52.3
4-8 years	32	17.9	19	12.6
8-12 years	6	3.4	6	4.0
12-16 years	12	6.7	10	6.6
16-20 years	12	6.7	12	8.0
over 20 years	7	3.9	23	15.2
MISSING	0	0.0	2	1.3
TOTALS	179	100.0	151	100.0

TABLE 3.4

QOAFL Frequency Distribution by Race

CATEGORY	1975		1977	
	n	RELATIVE FREQUENCY (%)	n	RELATIVE FREQUENCY (%)
BLACK	30	16.8	21	13.9
SPANISH	3	1.7	6	4.0
ASIAN	2	1.1	0	0.0
AMERICAN INDIAN	6	3.3	1	.7
WHITE	128	71.5	115	76.1
OTHER	9	5.0	8	5.3
MISSING	1	.6	0	0.0
TOTALS	179	100.0	151	100.0

TABLE 3.5

QOAFL Frequency Distribution by Education Level

CATEGORY	1975		1977	
	n	RELATIVE FREQUENCY(%)	n	RELATIVE FREQUENCY(%)
Some High School	13	7.3	2	1.3
High School	97	54.2	68	45.0
Trade School	4	2.2	4	2.6
Less than 1 year college	31	17.3	37	24.5
1-2 years of college	25	14.0	23	15.2
2-3 years of college	6	3.4	7	4.6
3-4 years of college	3	1.7	4	2.6
College Grad	0	0.0	3	2.0
Graduate Student	0	0.0	2	1.3
Post-Graduate Student	0	0.0	1	.7
Missing	0	0.0	2	1.3
TOTALS	179	100.0	151	100.0

TABLE 3.6

Means of Indices Formed From 1975 QOAFL WSS Responses

INDEX	MEAN	STANDARD DEVIATION	RANGE OF SCALE	95% CONFIDENCE INTERVAL
JSAT	15.16	5.72	(4-28)	(14.32, 15.98)
CI	3.15	1.44	(1-5)	(2.94, 3.36)
WKSAT	3.60	2.00	(1-7)	(3.31, 3.89)
CHAL	2.46	1.39	(1-5)	(2.26, 2.66)
LDSAT	7.03	1.75	(2-12)	(6.77, 7.29)
GRWTH	3.99	1.74	(1-7)	(3.74, 4.24)
PREST	3.89	1.87	(1-7)	(3.62, 4.16)
JBFM	2.99	1.25	(1-5)	(2.81, 3.17)
EQTY	7.16	1.85	(2-12)	(6.89, 7.43)
RECOG	2.89	1.30	(1-5)	(2.70, 3.08)
FRTM	3.60	1.92	(1-7)	(3.32, 3.88)
FDBAK	4.97	1.96	(2-10)	(4.68, 5.26)
ECSTD	3.79	1.65	(1-7)	(3.55, 4.03)
ECSEC	4.47	1.75	(1-7)	(4.21, 4.73)

TABLE 3.7

Means of Indices Formed From 1977 QOAFL WSS Responses

INDEX	MEAN	STANDARD DEVIATION	RANGE OF SCALE	95% CONFIDENCE INTERVAL
JSAT	16.37	5.60	(4-28)	(15.48, 17.26)
CI	3.36	1.52	(1-5)	(3.12, 3.60)
WKSAT	3.70	2.02	(1-7)	(3.38, 4.02)
CHAL	2.19	.89	(1-5)	(2.05, 2.33)
LDSAT	7.44	2.11	(2-12)	(7.10, 7.78)
GRWTH	4.13	1.77	(1-7)	(3.85, 4.41)
PREST	4.46	1.73	(1-7)	(4.18, 4.74)
JBFM	3.27	1.36	(1-5)	(3.05, 3.49)
EQTY	7.03	1.86	(2-12)	(6.73, 7.33)
RECOG	2.99	1.25	(1-5)	(2.79, 3.19)
FRTM	4.05	1.75	(1-7)	(3.77, 4.33)
FDBAK	5.68	2.25	(2-10)	(5.32, 6.04)
ECSTD	3.72	1.55	(1-7)	(3.47, 3.97)
ECSEC	4.26	1.70	(1-7)	(3.99, 4.53)

Once this background information was determined, more detailed analysis began. The first statistical tool used was Pearson correlation.

Pearson Correlation

As a "first-cut" effort to determine relative importance of the twelve job factors, Pearson correlation coefficients were determined (i) between job satisfaction, career intent, and each of the twelve job factors; and (ii) between the questions used to form multi-question indices.

The overall Pearson correlation matrices resulting from (i) above, presented in Tables 3.8 and 3.9, show how the job factors are inter-related. The matrices are symmetric with ones along the main diagonal.

The correlation coefficients between job satisfaction and each of the twelve job factors can be rank-ordered to give an indication of the relative importance of the factors. In Table 3.10, the correlation coefficients between job satisfaction and each of the twelve job factors are rank-ordered by magnitude. The significance levels, α, reported in the table reflect the probability that the coefficient is not significantly different from zero. An often used rule in social sciences is that an "acceptable" significance level is $\alpha \leq .05$, meaning that the chance that the correlation coefficient is essentially zero is not more than five percent (7:272).

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TABLE 3.8

Correlation Matrix: Twelve Job Factors, Job Satisfaction, and
Career Intent (1975 Yeargroup)

	JSAT	CI	WKSAT	CHAL	LDSAT	GRWTH	PREST	JBFM	EQTY	RECOG	FRTM	FDBAK	ECSTD
CI	.53												
WKSAT	.70	.39											
CHAL	.70	.42	.55										
LDSAT	.17	.17	.29	.18									
GRWTH	.47	.49	.49	.39	.33								
PREST	.44	.46	.35	.31	.25	.51							
JBFM	.40	.34	.42	.26	.16	.36	.35						
EQTY	.19	.10	.27	.10	.17	.38	.24	.18					
RECOG	.26	.23	.34	.26	.30	.35	.24	.50	.16				
FRTM	.31	.17	.35	.20	.14	.37	.33	.21	.11	.17			
FDBAK	.30	.22	.27	.29	.10	.25	.18	.20	.03	.38	.15		
ECSTD	.24	.15	.25	.12	.00	.12	.30	.23	.07	.22	.26	.03	
ECSEC	.21	.17	.23	.09	.09	.16	.30	.20	.14	.22	.27	.04	.47

TABLE 3.9

Correlation Matrix: Twelve Job Factors, Job Satisfaction, and
Career Intent (1977 Yeargroup)

	JSAT	CI	WKSAT	CHAL	LDSAT	GRWTH	PREST	JBFM	EQTY	RECOG	FRTM	FDBAK	ECSTD
CI	.40												
WKSAT	.72	.42											
CHAL	.57	.24	.51										
LDSAT	.20	.01	.29	.11									
GRWTH	.44	.25	.47	.27	.32								
PREST	.36	.31	.46	.27	.38	.69							
JBFM	.36	.32	.51	.24	.37	.46	.49						
EQTY	.17	.09	.26	.13	.27	.34	.37	.26					
RECOG	.38	.15	.49	.23	.45	.49	.44	.58	.21				
FRTM	.25	.09	.37	.15	.37	.33	.32	.29	.21	.25			
FDBAK	.37	.26	.44	.26	.40	.45	.43	.49	.29	.72	.29		
ECSTD	.25	.24	.32	.14	.05	.41	.34	.18	.15	.15	.17	.21	
ECSEC	.25	.08	.24	.08	.10	.28	.35	.06	.21	.14	.17	.08	.51

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TABLE 3.10

Rank-Ordered Pearson Correlation Coefficients For Job Satisfaction
Index With Job Factor Indices

YRGP	1975			1977			COMBINED		
ORDER	FACTOR	r	α	FACTOR	r	α	FACTOR	r	α
1	CHAL	.696	.001	WKSAT	.731	.001	WKSAT	.705	.001
2	WKSAT	.686	.001	CHAL	.590	.001	CHAL	.623	.001
3	LDSAT	.479	.001	EQTY	.471	.001	LDSAT	.463	.001
4	GRWTH	.463	.001	GRWTH	.453	.001	GRWTH	.462	.001
5	PREST	.456	.001	LDSAT	.436	.001	JBFM	.428	.001
6	JBFM	.452	.001	RECOG	.392	.001	PREST	.426	.001
7	EQTY	.368	.001	FDBAK	.389	.001	EQTY	.414	.001
8	RECOG	.327	.001	JBFM	.386	.001	RECOG	.359	.001
9	FRTM	.315	.001	PREST	.364	.001	FDBAK	.350	.001
10	FDBAK	.293	.001	ECSEC	.247	.003	FRTM	.292	.001
11	ECSTD	.243	.001	FRTM	.241	.004	ECSTD	.241	.001
12	ECSEC	.192	.012	ECSTD	.240	.004	ECSEC	.208	.001

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Table 3.10 indicates the twelve job factors fall into three major categories: highly correlated with job satis- faction (work satisfaction and challenge); moderately correlated with job satisfaction (leadership satisfaction, job freedom, growth, equity, prestige, feedback, and recognition); and weakly correlated with job satisfaction (free time, economic security, and economic standard). Overall, the results indicate work satisfaction and challenge are more strongly related to job satisfaction than are moderately correlated factors such as job freedom and recog- nition. It is erroneous to conclude weakly correlated factors are not important. Those factors, though not strongly related to job satisfaction directly, are related to other factors which in turn impact job satisfaction (as shown in Table 3.6), and may significantly impact other job dimensions, such as performance and absenteeism.

Table 3.11 shows the rank-order of the Pearson correlation coefficients between career intent and each of the twelve job factors for the 1975 data, the 1977 data, and for the two yeargroups combined. The results indicate none of the twelve factors are highly correlated with career intent, and only equity, work satisfaction, prestige, growth, challenge, job freedom, and leadership satisfaction are moderately correlated. The remainder of the job factors are weakly correlated with career intent. Again, the results do

not necessarily imply weakly correlated factors are unimportant with respect to overall management of the career field.

The correlation coefficients indicate, as intuitively expected, a positive relationship between job satisfaction and career intent. Highly job-satisfied individuals tend to express stronger intentions of continuing in the job. For the 1975 yeargroup, the Pearson correlation coefficient between job satisfaction and career intent was .52 (173 cases; α = .001).

Lastly, Pearson correlation was used to investigate the relationships between questions used to form the job satisfaction, equity, leadership satisfaction, and feedback indices. Table 3.12 displays the correlation matrices by yeargroup. The questions forming the 1977 leadership satisfaction index are most weakly correlated, and the questions forming the job satisfaction index for both yeargroups are most strongly correlated. The following abbreviations are used in Table 3.11:

EQTY1, EQTY2 = QOAFL questions on Equity (questions 12 and 13 in Appendix 2).

LDSAT1, LDSAT2 = QOAFL questions on Leadership Satisfaction (questions 10 and 11 in Appendix 2).

FDBAK1, FDBAK2 = QOAFL questions on Feedback (questions 17 and 18 in Appendix 2).

JSAT1, JSAT2, JSAT3, JSAT4 = QOAFL questions on Job Satisfaction (questions 1 through 4 in Appendix 2).

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TABLE 3.11

Rank Ordered Pearson Correlation Coefficients For Career Intent
Index With Job Factor Indices

YRGP		1975			1977			COMBINED		
ORDER	FACTOR	r	α	FACTOR	r	α	FACTOR	r	α
1	GRWTH	.467	.001	WKSAT	.429	.001	EQTY	.431	.001
2	PREST	.455	.001	EQTY	.428	.001	WKSAT	.402	.001
3	EQTY	.436	.001	PREST	.327	.001	PREST	.402	.001
4	LDSAT	.426	.001	JBFM	.327	.001	GRWTH	.368	.001
5	CHAL	.409	.001	ECSTD	.269	.001	CHAL	.334	.001
6	WKSAT	.377	.001	FDBAK	.258	.002	JBFM	.330	.001
7	JBFM	.326	.001	CHAL	.254	.002	LDSAT	.319	.001
8	RECOG	.231	.002	GRWTH	.249	.003	FDBAK	.234	.001
9	FDBAK	.199	.009	LDSAT	.201	.016	ECSTD	.199	.001
10	FRTM	.177	.020	RECOG	.116	.168	RECOG	.182	.001
11	ECSEC	.158	.037	ECSEC	.110	.188	FRTM	.150	.007
12	ECSTD	.146	.054	FRTM	.104	.212	ECSEC	.131	.019

TABLE 3.12

Pearson Correlation Matrices For Questions
Used To Form Multi-Question Indices

1975	EQTY1	LDSAT1	FDBAK1	JSAT1	JSAT2	JSAT3
EQTY2	.29					
LDSAT2		.41				
FDBAK2			.40			
JSAT2				.73		
JSAT3				.58	.66	
JSAT4				.66	.75	.60

1977	EQTY1	LDSAT1	FDBAK1	JSAT1	JSAT2	JSAT3
EQTY2	.48					
LDSAT2		.27				
FDBAK2			.47			
JSAT2				.76		
JSAT3				.61	.79	
JSAT4				.68	.80	.74

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With some knowledge of how the twelve job factors are related
to job satisfaction and career intent, the next step in the
analysis was to use factor analysis to establish the dimen-
sionality of the data base.

Factor Analysis

As explained in Chapter 2, factor analysis is a
statistical tool which can enable a researcher to establish
the key dimensions of a data base. If factor analysis is
successful, the input variables can be separated into a
smaller number of categories called "dimensions." The
dimensions are assumed to be generally independent, and
can usually be given specific names, based on the input
variables associated with the dimensions.

Various methods are available for conducting factor
analysis. Different methods generally yield slightly
different numerical results because of different mathematical
techniques used. However, the overall number of independent
dimensions found are the same, regardless of specific tech-
niques employed.

For the twelve job factors formed from the QOAFL data
base, principal component and Rao's canonical factoring were
used, several methods of rotation were tried, and the version
resulting in the most clear-cut classifications of the input
variables was selected. Differences between principal com-
ponent analysis and Rao's canonical factoring primarily

involve treatment of the main diagonal of the correlation matrix of the input variables, and the overall method objective (12:479-81). In principal component analysis, the main diagonal of the input variable matrix is not altered, and the objective is to extract all principal components which explain at least a specified amount of the variance of the data (12:479). In Rao's canonical factoring, the main diagonal of the input variable correlation matrix is replaced by estimates of communality ("communality" refers to the fraction of a specific input variable variance captured by the components), and the overall objective is to find a factor solution which maximizes the correlation between the set of hypothesized factors and the input variables (11:p.6-25; 13:481).

A second issue in selecting a factor analysis procedure is rotation of the factor structure matrix. Rotation of the factor structure matrix can be represented graphically. If, for example, five different input variables have been determined to fit into two orthogonal categories (called "dimension 1" and "dimension 2"), the results may be plotted, as shown in Figure 3.1, using the factor loadings ("loadings" are numbers between plus and minus one which indicate the degree to which a specific input variable belongs in a given category).

It is feasible that the variables may be more clearly separated into the two categories by rotating the axes

(representing dimension 1 and dimension 2) from $D_1 - D_2$ to $D_1{}^* - D_2{}^*$. In this way, the factor loadings are altered so that the input variables are more clearly associated with specific dimensions. Table 3.13 shows differences in the factor loadings for the original and rotated positions of the axes of this example.

Factor analysis was performed first for each year-group separately, and comparison showed that the dimensionality of the 1975 data was identical to that of the 1977 data; there were only minor differences in the factor loading matrices. Hence, the 1975 and 1977 data were combined for factor analysis of the twelve job factors. Principal component analysis with a Quartimax rotation of the factor matrix resulted in the clearest separation of the job factors into three dimensions. Under Quartimax rotation, the original dimensions are orthogonally rotated to minimize the cross-products of the factor loadings for each input variable (job factor) (12:484). This transforms the factor loadings so that variables tend to load heavily onto one dimension but close to zero on all other dimensions.

Table 3.14 shows the loadings for the twelve input variables onto three orthogonal dimensions: dimension 1, dimension 2, and dimension 3. Most of the twelve input variables tend to load heavily onto only one of the three dimensions. Job freedom is the only input variable for which the factor loadings are difficult to interpret.
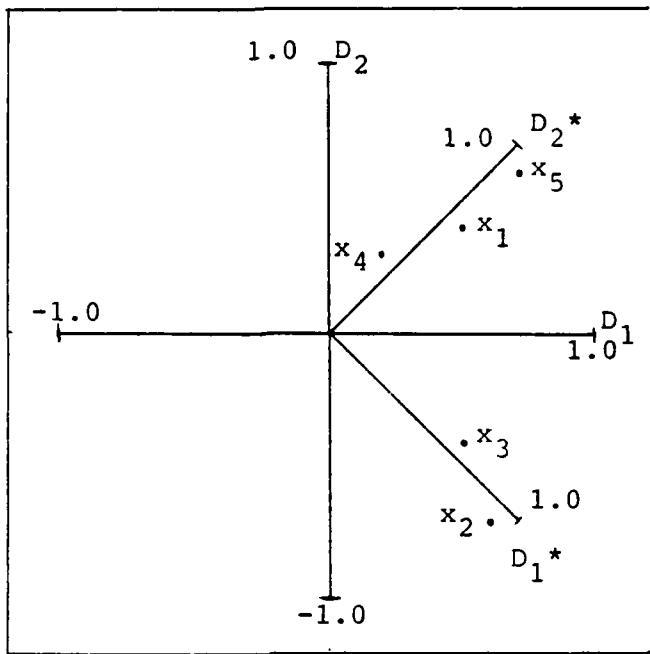
FIGURE 3.1.   Rotation of Dimension Axes

TABLE 3.13

Change in Factor Loadings After Rotation
of Dimension Axes

	D_1	D_2	D_1^*	D_2^*
x_1	.5	.4	.1	.65
x_2	.6	-.7	.9	-.1
x_3	.5	-.4	.65	.1
x_4	.2	.3	-.1	.35
x_5	.7	.6	.1	.9

Separation of the job factors into three categories,
as shown in Table 3.15, made it possible to name the
dimensions. From the factor loading matrix, the job factors
work satisfaction, challenge, personal growth and development,
equity, and prestige clearly fall under dimension 1. Free
time satisfaction is also placed under dimension 1, although
it does not load quite as heavily as other job factors. Work
satisfaction, job challenge, growth, and prestige are
intrinsic characteristics associated with the work itself,
as opposed to extrinsic factors such as pay and benefits,
supervision, and promotions, rewards not associated with the
work itself (17:627,629). Leadership satisfaction, equity,
and free time satisfaction are often referred to as "hygiene
factors," insofar as they characterize the work situation
and work environment (1:240-41). Because the intrinsic
variables under dimension 1 are more numerous than the
hygiene variables, dimension 1 was named the "Intrinsic
Dimension."

Feedback and recognition, which clearly fall under
dimension 2, are both associated with job enrichment. Job
enrichment involves responsibility, job freedom, importance
of performed tasks, worker accountability, and feedback.
Factor loadings do not indicate job freedom is clearly
associated with dimension 2, but since it is conceptually
compatible with feedback and recognition and loads most

TABLE 3.14

QOAFL Factor Loading Matrix After
Quartimax Rotation

| INPUT VARIABLE | DIMENSION 1 | LOADINGS | |
		DIMENSION 2	DIMENSION 3
Economic Standard	.38551	.07331	.71180
Economic Security	.33906	-.02614	.76572
Free Time Sat	.46245	.05875	.17737
Work Satisfaction	.78667	.21038	-.05051
Challenge	.63645	-.01989	-.32022
Leadership Sat	.66503	.27068	.22661
Feedback	.30788	.73056	-.07402
Recognition	.34786	.78895	.10691
Job Freedom	.48316	.55889	.03538
Equity	.77142	-.10339	.01607
Growth	.71818	.14178	.07693
Prestige	.71426	.01002	.18377

TABLE 3.15

Separation of QOAFL Job Factors Into
Three Dimensions

INTRINSIC DIMENSION	JOB ENRICHMENT DIMENSION	ECONOMIC DIMENSION
Work Satisfaction	Feedback	Econ Security
Challenge	Recognition	Econ Standard
Leadership Sat	Job Freedom	
Equity		
Prestige		
Growth		
Free Time Sat		

heavily onto dimension 2, job freedom is included with feedback and recognition, and dimension 2 is named the "Job Enrichment Dimension."

The input variables which define dimension 3 are quite easily interpreted. The economic standard and economic security indices make up dimension 3, named the "Economic Dimension." This dimension represents satisfaction with pay and benefits (indirectly), satisfaction with standard of living, and confidence in future ability to maintain an acceptable economic level (keeping pace with inflation, providing for dependent needs and desires, etc.).

The factor analysis results were used to form a set of predictor variables for multiple linear regression, the next step in the analysis of the relative importance of the twelve job factors. The job factors forming each dimension were simply added to form three "master" variables for input to the multiple linear regression equations.

Multiple Linear Regression

Multiple linear regression is used to determine a relationship (usually a linear combination of "predictor" variables) which can be used to predict or explain the behavior of a dependent variable.

One of the statistics associated with multiple linear regression is the coefficient of determination, R^2, a number between zero and one calculated by dividing the variation in the dependent variable which the model "captures" or "explains" by the total variation in the dependent variable (12:324). An R^2 value of zero indicates a worthless model, whereas an R^2 value of one indicates a perfect model.

The R^2 values reported in the following pages are of moderate strength ($R^2 \leq .6$), and indicate that the regression models have only fair predictive capability. Prediction, however, was not the primary objective of this research; rather, the primary objective was to determine the relative importance of the predictor variables (the three dimensions

identified by factor analysis). In the following models, predictor variables are listed in order of entry into the regression equation. In forward stepwise linear regression, when the predictor variables are uncorrelated, the predictor variable which explains the most variance in the dependent variable enters the equation first; the predictor variable which explains the second greatest amount of variance in the dependent variable enters the equation next; and so forth until remaining predictor variables do not account for significant amounts of variance in the dependent variable.

The 1975 and 1977 yeargroups were combined for multiple linear regression, and job satisfaction and career intent were dependent variables in regression equations formed using the twelve job factors as predictor variables (i) in combined form indicated by factor analysis, and (ii) in uncombined form. The results of the analysis with the combined job factors or dimensions are shown in Figures 3.2 and 3.3. In those figures, the following abbreviations (in addition to abbreviations used in previous tables) are used:

INTRIN = Intrinsic Dimension (arithmetic sum of work satisfaction, challenge, leadership satisfaction, equity, growth, prestige, and free time satisfaction indices).

JE = Job Enrichment Dimension (arithmetic sum of feedback, recognition, and job freedom indices).

ECON = Economic Dimension (arithmetic sum of economic standard and economic security indices).

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The regression analysis results presented in Figures 3.2 and 3.3 are compatible with the Pearson correlation results. In both the job satisfaction and career intent models, factors forming the intrinsic dimension have more impact on job satisfaction and career intent than factors forming the job enrichment dimension. The variables not in the regression equations are those which were least correlated with job satisfaction and career intent.

The overall models presented in Figures 3.2 and 3.3 indicate that estimates or predictions of individual job satisfaction and career intent scores are obtained by substituting the values of the appropriate predictor variables into the algebraic expressions. The significance levels listed in the figures apply to the coefficients of the predictor variables. The value listed for each regression coefficient is an estimate of the true value of the coefficient, and the significance reflects the probability that the true value of the coefficient is zero.

One final point concerning Figures 3.2 and 3.3 is that the order of magnitude difference between the coefficients of the job satisfaction versus the career intent model is partially a function of the relative magnitudes of the job satisfaction and career intent scores. The job satisfaction index ranges from a low of 4 to a high of 28, while the range of the career intent index is much more narrow: from a low of 1 to a high of 5.

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	INTRIN	.37	.46	.000
(2)	JE	.19	.47	.017

OVERALL MODEL: JSAT = 1.59 + .37(INTRIN) + .19(JE)

VARIABLES NOT IN THE EQUATION: ECON

FIGURE 3.2.   Job Satisfaction Regression Model With Factored Indices As Predictor Variables (1975 and 1977 Combined)

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	INTRIN	.08	.22	.000

OVERALL MODEL: CI = .83 + .08(INTRIN)

VARIABLES NOT IN THE EQUATION: ECON, JE

FIGURE 3.3.   Career Intent Regression Model With Factored Indices As Predictor Variables (1975 and 1977 Combined)

In an attempt to supplement the information obtained through regression analysis using the three underlying dimensions as predictor variables, further regression analysis was conducted using the job factors in uncombined form. The results of the further regression are presented for completeness, but interpretation is somewhat complicated by the problem of multicollinearity (inter-relatedness) of the predictor variables.

The additional regression models for job satisfaction and career intent were built by first using all twelve job factors as predictor variables, and then by using only eleven of the job factors (all except work satisfaction) as predictor variables. Comparison of the additional regression models showed that, for job satisfaction, multicollinearity prevented entry of several job factors into the equation when work satisfaction was included in the analysis. The result shown in Figure 3.4, therefore, is the regression model built for job satisfaction using only eleven of the twelve original job factors as predictor variables. For career intent, however, a better overall model was obtained by including all twelve of the original job factors as predictor variables; the career intent model is presented in Figure 3.5.

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	CHAL	2.31	.389	.000
(2)	GRWTH	.46	.468	.005
(3)	JBFM	.69	.504	.000
(4)	FDBAK	.35	.518	.003
(5)	PREST	.36	.530	.021
(6)	ECSEC	.27	.536	.047

OVERALL MODEL: JSAT = 1.70 + 2.31(CHAL) + .46(GRWTH)
                     + .69(JBFM) + .35(FDBAK) + .36(PREST)
                     + .27(ECSEC)

VARIABLES NOT IN THE EQUATION: FRTM, LDSAT, RECOG, EQTY,
                                ECSTD (WKSAT not included in
                                analysis)

FIGURE 3.4.   Job Satisfaction Regression Model With Original
              Job Factors As Predictor Variables

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	EQTY	.165	.190	.000
(2)	JBFM	.191	.236	.003
(3)	PRES	.133	.258	.007
(4)	CHAL	.178	.275	.009

OVERALL MODEL: CI = .529 + .165(EQTY) + .191(JBFM)
+ .133(PRES) + .178(CHAL)

VARIABLES NOT IN THE EQUATION: FRTM, WKSAT, LDSAT, GRWTH,
RECOG, FDBAK, ECSTD, ECSEC

FIGURE 3.5.   Career Intent Regression Model With Original
Job Factors As Predictor Variables

The factored predictor variables used in the regres-
sion equations of Figures 3.2 and 3.3 were assumed to be
linearly independent. The original twelve job factors,
however, are highly inter-related, as was shown in the
Pearson correlation matrix (Table 3.8). When two predictor
variables are inter-related, the entry of one into the
regression equation can prevent the entry of the second; the
explanatory power of the second predictor variable decreases
as a result of the inclusion of the first predictor variable
(12:340-41). Thus, when multicollinearity is present, no
firm conclusions regarding the importance of variables not
included in the regression equation can be drawn. An

examination of all of the analyses, however, gives some indication of the relative importance of variables in the equation.

Figures 3.4 and 3.5 present the results of the regression analysis using uncombined job factors as predictor variables. The order of entry of the variables is compatible with the rank-order suggested by Pearson correlation, and the R^2 values are higher than those of the previous regression models, which suggests the explanatory power is greater for the latter models.

Summary

This chapter presented the results of the 1975 and 1977 Quality of Air Force Life survey data analysis. Pearson correlation, factor analysis, and multiple linear regression were statistical tools used to determine which job factors historically exhibit greater impact on WSS job satisfaction and career intent.

The Pearson correlation and multiple linear regression results were highly compatible. Both analyses suggested basically the same overall rank ordering of the twelve job factors. A weakness of multiple regression in comparison to Pearson correlation, however, is that regression fails to indicate the relative importance of factors not included in the regression equation. For variables included in the regression equation, however,

multiple linear regression has the advantage of quanti-tatively representing predictor variable impact on the dependent variable.

Factor analysis of the twelve job factors was successful, and indicated that three separate dimensions underlie the data base. The twelve job factors, as sug-gested by factor analysis, tend to fall within one of three categories: intrinsic to the job itself, associated with job enrichment, or related to economic aspects of the job.

Collectively, the analysis suggests that the job factors which exhibit the greatest impact on job satis-faction are work satisfaction, job challenge, satisfaction with leadership, prestige, satisfaction with opportunities for growth and development, and feedback from supervisors, in that order. The remaining job factors, job freedom, equity, recognition, satisfaction with free time, economic standard, and economic security did not exhibit significant impact on WSS job satisfaction.

The job factors which showed greatest impact on career intent were equity, satisfaction with the work itself, prestige, opportunities for growth and development, job challenge, and job freedom. The remaining job factors did not show direct significant impact on career intent.

Although the above lists are similar, satisfaction with leadership and feedback rank high in predicting job

satisfaction but not career intent, and equity and job freedom are among the best job factors in predicting career intent but do not rank high in predicting job satisfaction. One possible reason for this result is that an individual leader (usually a source of feedback) typically supervises a given individual only in the short run, and can impact job satisfaction, but can not greatly impact long-run decisions concerning employment. Also, equity and job freedom may involve individual perceptions of alternate employment; perceptions that workers elsewhere receive or do not receive fair and equal treatment and job freedom may impact long-term career decisions. If an equal opportunity or job freedom "gap" is perceived, an individual may be more inclined to change jobs, even though presently job-satisfied. The above lists do not imply that job factors exhibiting no historical, significant impact on job satisfaction or career intent are not important to overall job performance and health of the career field.

The next chapter presents the results of Pearson correlation, factor analysis, and multiple linear regression applied to WSS responses to the supplemental survey conducted during June, 1981.

CHAPTER 4

SUPPLEMENTAL SURVEY DATA ANALYSIS

The purpose of this chapter is to present the results
of the analysis of data collected via the supplemental survey
conducted during June, 1981. The 1981 data were analyzed
exactly as were the 1975 and 1977 data: beginning with an
overview of survey responses (means and frequencies) and
progressing through Pearson correlation, factor analysis,
and multiple linear regression. Prior to administering the
supplemental survey on a large scale, however, the question-
naire was pretested to help ensure validity.

Questionnaire Pretest

The supplemental survey questionnaire was developed
to measure Weapons Systems Security specialist levels of job
satisfaction, career intent, and satisfaction with numerous
job factors. The job factors on the supplemental question-
naire are generally not the same as those on the QOAFL
questionnaires; information about job factors more peculiar
to the Weapons Systems Security branch of the Security Police
career field was desired. Tailoring the survey to Weapons
Systems Security provided more specific information
concerning possible causes of WSS job dissatisfaction and

turnover. Personal experience was drawn upon to enumerate most of the job factors included in the survey.

The complete questionnaire consisted of three parts: nine demographic questions, nine questions on career intent and job satisfaction (taken verbatim from the QOAFL questionnaires), and eighteen questions on job factors hypothesized to impact WSS job satisfaction and career intent. The questionnaire is presented in Appendix A, and the eighteen job factors are listed and defined in Table 4.1.

A pretest of the supplemental survey questionnaire was conducted to ensure validity of the newly constructed job factor questions, to identify terminology and clarity problems and to solicit suggestions for overall improvement of the questionnaire. The Operations Officer for the First Security Police Squadron at Langley AFB, Virginia, Captain Charles E. Greg, agreed, on behalf of his squadron, to participate in the questionnaire pretest. Twenty-five copies of the questionnaire and questionnaire critique (also shown in Appendix A) were sent to the 1st SPS, and nineteen were completed and returned.

The pretest responses indicated no problems with question clarity or content, and an average of ten to fifteen minutes were required to complete the survey. Based on the favorable pretest, no major changes were made to the questionnaire before conducting the large-scale survey.

TABLE 4.1

Job Factors Included In Supplemental Questionnaire

JOB FACTOR	ABBREVIATION	DESCRIPTION
Work Schedule	WKSCHED	Satisfaction with normal work schedule (excluding overtime, recalls, etc.).
Supervision	SPRVSN	Satisfaction with quality of supervision from immediate supervisor.
Recognition	RECOG	Satisfaction with recognition received for doing job well.
Job Freedom	JBFM	Satisfaction with amount of freedom to make job-related decisions.
Personal Equipment	PERSEQP	Satisfaction with equipment issued for personal use (flashlight, gas mask, etc.).
Squadron Equipment	SQDNEQP	Satisfaction with squadron-maintained equipment (vehicles, radios, etc.).
Off-Duty Activities	OFFDUTY	Satisfaction with opportunities to get involved in sports, hobbies, education, etc.
Prestige	PREST	Satisfaction with respect received from others; prestige associated with job.
Training	TNG	Satisfaction with adequacy of training.
Meals	MEALS	Satisfaction with meals consumed while on duty.

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TABLE 4.1 (Continued)

JOB FACTOR	ABBREVIATION	DESCRIPTION
Special Duty Commitments	SPCLDTY	Satisfaction with amount of time spent for training, recalls, military appointments, etc.
Duty Outdoors	WEATHER	Satisfaction with performing duty while exposed to weather conditions.
Facilities	FACIL	Satisfaction with gate shacks, CSC, towers, alert facilities, etc.
Military Pay and Benefits	PAY	Satisfaction with military pay and compensation.
Recruiting	RCRTR	Satisfaction with accuracy and completeness of information supplied by recruiter about the Security Police career field.
Organizational Policies	SQDNPOL	Satisfaction with unit policies such as appointment system, newcomer orientation, etc.
Relationships with Peers	PEERREL	Satisfaction with relationships with those who perform the same tasks.
Relationships with Superiors	SUPREL	Satisfaction with relationships with those senior in grade or who hold supervisory positions.

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Supplemental Survey

After receiving approval from HQAFMPC/MPCYPS, HQUSAF/SP, SAC/SP, and TAC/SP, the main survey was conducted. A target sample size of 250 was arbitrarily selected for the supplemental survey. Operations Officers of the Security Police squadrons at the bases listed in Chapter 1 agreed, on behalf of their squadron, to participate in the survey. Fifty copies of the questionnaire were mailed to each of the five bases, and 196 completed questionnaires were returned. Since no changes to the questionnaire were made after the pretest, the nineteen cases from the 1st SPS were included for a total of 215 cases to analyze.

Overview of the Supplemental Survey Data

The Operations Officers of the squadrons which participated in the survey were requested to randomly distribute the questionnaires to enlisted personnel performing operational flight security duties. The frequency distributions of responses to key demographic questions are presented in Tables 4.2 through 4.6. One hundred thirty-eight of the respondees were assigned to SAC, and seventy-seven were assigned to TAC.

Table 4.7 presents overall means, standard deviations, and ninety-five percent confidence intervals for the means of the job satisfaction, career intent, and eighteen job factor indices. The job satisfaction and career intent indices for

the 1981 data were computed exactly as they were computed for the 1975 and 1977 data. The scale ranges for the job satisfaction and career intent indices are the same as for the 1975 and 1977 data, and the scale range for the eighteen job factor indices is from a low of one to a high of seven (an index value of four indicates neutrality or undecidedness).

The following sections present the results of the more in-depth analysis of the supplemental survey data, beginning with Pearson correlation.

Pearson Correlation

Pearson correlation analysis was conducted for the 1981 data just as for the 1975 and 1977 data. The overall correlation matrix was computed, and the eighteen job factors were ranked in order of correlation with job satisfaction and career intent. The only multiple question index formed from the 1981 data for Pearson correlation was the job satisfaction index. Results of the above analysis are shown in Tables 4.8 through 4.11. The Pearson correlation matrix (Table 4.8) is structured like those for the QOAFL data; a symmetric matrix with ones along the main diagonal.

As Table 4.9 indicates, none of the eighteen job factors are highly correlated with job satisfaction. Most of the factors are moderately correlated $(.3 \leq r < .6)$, and only satisfaction with quality of supervision, personal

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TABLE 4.2

Supplemental Survey Frequency Distribution By Grade

CATEGORY	n	RELATIVE FREQUENCY (%)	CUMULATIVE FREQUENCY (%)
AB	3	1.4	1.4
AMN	6	2.8	4.2
A1C	65	30.2	34.4
SRA	51	23.7	58.1
SGT	37	17.2	75.3
SSGT	29	13.5	88.8
TSGT	17	7.9	96.7
MSGT	7	3.3	100.0
TOTAL	215	100.0	

TABLE 4.3

Supplemental Survey Frequency Distribution By
Years Of Service

CATEGORY	n	RELATIVE FREQUENCY (%)	CUMULATIVE FREQUENCY (%)
0-4 Years	134	62.3	62.3
4-8 Years	43	20.0	82.3
8-12 Years	15	7.0	89.3
12-16 Years	14	6.5	95.8
16-20 Years	8	3.7	99.5
Over 20 Years	1	.5	100.0
TOTAL	215	100.0	

TABLE 4.4

Supplemental Survey Frequency Distribution By
Education Level

CATEGORY	n	RELATIVE FREQUENCY (%)	CUMULATIVE FREQUENCY (%)
Some High School	6	2.8	2.8
High School Grad	105	48.8	51.6
Trade School	16	7.4	59.0
0-1 Years College	29	13.5	72.5
1-2 Years College	31	14.4	86.9
2-3 Years College	15	7.0	93.9
3-4 Years College	9	4.2	98.1
College Grad	2	.9	99.0
Graduate Work	1	.5	99.5
TOTALS	215	100.0	

TABLE 4.5

Supplemental Survey Frequency Distribution By Race

CATEGORY	n	RELATIVE FREQUENCY (%)	CUMULATIVE FREQUENCY (%)
BLACK	38	17.6	17.6
WHITE	156	72.6	90.3
OTHER	18	8.4	98.7
MISSING	3	1.4	100.0
TOTALS	215	100.0	

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TABLE 4.6

Supplemental Survey Frequency Distribution By
Work Schedule

CATEGORY	n	RELATIVE FREQUENCY (%)	CUMULATIVE FREQUENCY (%)
Permanent Days	63	29.3	29.3
3 Swings, 3 Mids, 3 Days Off	134	62.3	91.6
Other	15	7.0	98.6
Missing	3	1.4	100.0
TOTALS	215	100.0	

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TABLE 4.7

Index Means, Confidence Intervals For
Supplemental Survey Data

INDEX	NO. OF CASES	MEAN	STANDARD DEVIATION	95% CONFIDENCE INTERVAL
JSAT	205	14.91	5.05	(14.22, 15.60)
CI	214	2.89	1.27	(2.72, 3.06)
RCRTR	214	2.49	1.93	(2.23, 2.75)
SQDNEQP	213	2.54	1.63	(2.32, 2.76)
MEALS	212	2.67	1.98	(2.40, 2.94)
PAY	215	2.92	1.87	(2.67, 3.17)
SPCLDTY	215	3.02	1.78	(2.78, 3.26)
PERSEQP	213	3.23	1.85	(2.98, 3.48)
PREST	212	3.23	1.92	(2.97, 3.45)
RECOG	214	3.29	1.96	(3.03, 3.55)
SQDNPOL	210	3.44	1.63	(3.22, 3.66)
JBFM	213	3.75	1.92	(3.49, 4.00)
FACIL	214	3.92	1.68	(3.69, 4.15)
OFFDUTY	214	3.98	1.91	(3.72, 4.24)
TNG	214	4.13	1.73	(3.90, 4.36)
WEATHER	212	4.17	1.80	(3.93, 4.41)
WKSCHED	215	4.20	1.83	(3.96, 4.44)
SUPREL	211	4.25	1.90	(3.99, 4.51)
SPRVSN	212	4.60	1.89	(4.35, 4.85)
PEERREL	211	5.22	1.59	(5.01, 5.43)

equipment, working outdoors, and relationships with peers are weakly correlated with job satisfaction.

The rank-order of correlation coefficients between the job factors and career intent (Table 4.10) is very similar to the rank-order for correlation with job satisfaction. As with the QOAFL data, the coefficients tend to be lower for correlation with career intent than for correlation with job satisfaction. Most of the job factors are weakly correlated with career intent. The levels of significance are so low for the training, peer relationships, and working outdoor indices that the true values of the correlation coefficients are not significantly different from zero (for $\alpha = .05$).

The Pearson correlation coefficient between job satisfaction and career intent for the 1981 data was .54 (205 cases, $\alpha = .001$), which is close to the 1975 and 1977 correlation coefficients between job satisfaction and career intent. Table 4.11 shows the correlation matrix for the four questions used to compute the job satisfaction index. As for the QOAFL data, the questions are strongly correlated and thus are compatible in forming the job satisfaction index.

The results of the Pearson correlation analysis of the supplemental survey data are very similar to the results of the Pearson correlation analysis of the QOAFL data. As

TABLE 4.8

Correlation Matrix: Eighteen Job Factors,
Job Satisfaction, And Career Intent (1981 Yeargroup)

	JSAT	CI	SCHEDSAT	SPRVSN	RECOG	JBFM	PERSEQP	SQDNEQP	OFFDUTY	PREST
CI	.52									
SCHEDSAT	.36	.28								
SPRVSN	.25	.18	.40							
RECOG	.48	.46	.35	.33						
JBFM	.51	.44	.39	.38	.42					
PERSEQP	.28	.26	.15	.17	.21	.33				
SQDNEQP	.32	.31	.35	.26	.36	.29	.56			
OFFDUTY	.35	.21	.29	.22	.32	.39	.24	.32		
PREST	.49	.36	.29	.30	.52	.38	.23	.38	.29	
TNG	.36	.07	.19	.39	.17	.21	.12	.07	.23	.28
MEALS	.46	.41	.31	.27	.48	.45	.37	.52	.32	.38
SPCLDTY	.26	.18	.05	.11	.16	.24	.28	.25	.21	.33
WEATHER	.24	-.01	.25	.15	.26	.21	.11	.30	.18	.30
FACIL	.33	.26	.24	.46	.29	.36	.25	.33	.26	.40
PAY	.26	.21	.21	.27	.25	.24	.25	.46	.24	.39
RCRTR	.32	.27	.19	.09	.27	.26	.21	.48	.22	.33
SQDNPOL	.43	.38	.14	.32	.32	.37	.25	.31	.36	.39
PEERREL	.13	.08	.17	.27	.04	.15	.04	.08	.20	.10
SUPREL	.37	.18	.30	.37	.26	.34	.08	.25	.21	.35

TABLE 4.8 (Continued)

	TNG	MEALS	SPCLDTY	WEATHER	FACIL	PAY	RCRTR	SQDNPOL	PEERREL
MEALS	.29								
SPCLDTY	.20	.26							
WEATHER	.18	.24	.28						
FACIL	.33	.26	.32	.29					
PAY	.33	.38	.29	.14	.33				
RCRTR	.07	.28	.27	.19	.23	.35			
SQDNPOL	.34	.43	.28	.30	.38	.28	.27		
PEERREL	.09	-.01	.09	.24	.21	-.02	.00	.31	
SUPREL	.26	.23	.19	.32	.39	.21	.17	.41	.35

TABLE 4.9

Rank-Ordered Pearson Correlation Coefficients Between
Job Satisfaction Index And Job Factor Indices

RANK ORDER	VARIABLE	CORRELATION COEFFICIENT	SIGNIFICANCE
1	JBFM	.527	.001
2	RECOG	.473	.001
3	MEALS	.464	.001
4	PREST	.432	.001
5	SQDNPOL	.411	.001
6	SUPREL	.386	.001
7	SCHEDSAT	.366	.001
8	FACIL	.366	.001
9	TNG	.364	.001
10	SPCLDTY	.342	.001
11	FRTM	.332	.001
12	SQDNEQP	.323	.001
13	PAY	.307	.001
14	RCRTR	.304	.001
15	SPRVSN	.275	.001
16	PERSEQP	.272	.001
17	WEATHER	.169	.016
18	PEERREL	.143	.042

TABLE 4.10

Rank-Ordered Pearson Correlation Coefficients Between Career Intent Index And Job Factor Indices

RANK-ORDER	VARIABLE	CORRELATION COEFFICIENT	SIGNIFICANCE
1	JBFM	.450	.001
2	RECOG	.410	.001
3	MEALS	.407	.001
4	SQDNPOL	.349	.001
5	PREST	.320	.001
6	SCHEDSAT	.314	.001
7	SQDNEQP	.289	.001
8	RCRTR	.286	.001
9	OFFDUTY	.281	.001
10	PAY	.247	.001
11	PERSEQP	.229	.001
12	SPCLDTY	.222	.001
13	FACIL	.214	.002
14	SUPREL	.193	.005
15	SPRVSN	.193	.005
16	TNG	.103	.134
17	PEERREL	.082	.238
18	WEATHER	.004	.952

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TABLE 4.11

Correlation Matrix: Supplemental Survey
Job Satisfaction Questions

	JSAT 1	JSAT 2	JSAT 3
JSAT 2	.748		
JSAT 3	.567	.665	
JSAT 4	.555	.615	.567

was done for the QOAFL data, the next step in the analysis
was determination of the underlying dimensionality of the
data base through factor analysis.

Factor Analysis

Factor analysis of the eighteen job factors resulted
in separation of seventeen of the factors into four dimen-
sions. Principal component analysis with Quartimax rotation
of the factor matrix (same as was applied to the QOAFL data)
was selected as the most clear-cut representation of the
underlying dimensions of the supplemental survey data. The
factor loading matrix is shown in Table 4.12.

As the loading matrix implies, only thirteen of
the eighteen job factors are clearly associated with only
one dimension. Four of the remaining five indices,
satisfaction with work schedule, time spent on special duty
commitments, working outdoors, and squadron policies were

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TABLE 4.12

Factor Loading Matrix: Supplemental Survey Data

JOB FACTOR	DIMENSION 1	DIMENSION 2	DIMENSION 3	DIMENSION 4
SCHEDSAT	.468	.255	.024	-.575
SPRVSN	.341	.280	.585	-.324
RECOG	.643	.126	.050	-.164
JBFM	.587	.190	.210	-.223
PERSEQP	.632	-.211	-.027	.043
SQDNEQP	.791	-.023	-.185	.043
OFFDUTY	.507	.208	.000	-.068
PREST	.616	.120	.209	.172
TNG	.300	.018	.742	.111
MEALS	.756	-.087	.034	-.120
SPCLDTY	.422	.163	.110	.619
WEATHER	.336	.539	-.148	.163
FACIL	.462	.182	.491	.063
PAY	.587	-.160	.292	.070
RCRTR	.608	.036	-.203	.291
SQDNPOL	.511	.373	.310	.207
PEERREL	.074	.751	.079	-.103
SUPREL	.294	.634	.295	-.019

assigned to the dimension onto which they loaded most heavily. Satisfaction with facilities was considered too "mixed" to assign to a specific dimension.

Table 4.13 shows the classification of the job factors into four dimensions. Similar to the QOAFL factor analysis results, the majority of the job factors fall under the first dimension. Recognition and job freedom, as stated in Chapter 3, are associated with job enrichment; satisfaction with equipment, opportunities for engaging in off-duty activities, meals, pay, recruiter-supplied information, and unit policies are hygiene factors (also discussed in Chapter 3); and prestige is an intrinsic job characteristic. Insofar as most of the job factors under the first dimension characterize some aspect of work, the first dimension is named the "working conditions" dimension.

Satisfaction with relationships with peers, relationships with superiors, and working outdoors fall under the second dimension. These job factors characterize the work atmosphere. In a global sense, work atmosphere is a component of working conditions, but for this data base work atmosphere factors tend to vary independently of the remainder of working conditions factors. Thus, the second dimension is named the "work atmosphere" dimension.

TABLE 4.13

Separation Of Supplemental Survey Job Factors Into
Four Dimensions

WORKING CONDITIONS	WORK ATMOSPHERE	LEADERSHIP	WORK HOURS
RECOG JBFM PERSEQP SQDNEQP OFFDUTY PREST MEALS PAY RCRTR SQDNPOL	PEERREL SUPREL WEATHER	SPRVSN TNG	SCHEDSAT SPCLDTY

The job factors assigned to the third dimension, satisfaction with supervisor and satisfaction with the adequacy of training, both involve leadership aspects of the job. The link between satisfaction with supervision and leadership is obvious; the link between satisfaction with adequacy of training and leadership is that training is conducted by supervisors. Training is one of the most important aspects of NCO leadership in Weapons Systems Security: NCOs typically conduct On-The-Job Training (OJT), flight exercises, standboard preparation, and annual unit training. The third dimension is named the "leadership" dimension.

The fourth dimension, which includes satisfaction with work schedule and satisfaction with the amount of time

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spent on special duty commitments, is perhaps the easiest
dimension to name. Both of these job factors involve time
spent performing duties which stem either from being an
active duty member of the USAF or from being a WSS Specialist.
The last dimension, then, is named the "work hours" dimension.

Only six of the eighteen supplemental survey job
factors are counterparts of QOAFL job factors. The six job
factors and the QOAFL counterparts are shown in Table 4.14.
Comparison of the locations of these six job factors under
the dimensions of the QOAFL data to the locations under the
dimensions of the supplemental survey data reveals that the
working conditions dimension of the supplemental survey
data includes counterparts of factors from each of the
three dimensions of the QOAFL survey data: prestige and
free time satisfaction from the intrinsic dimension; recog-
nition and job freedom from the job enrichment dimension;
and economic standard from the economic dimension. The
counterpart of satisfaction with leadership (assigned to
the intrinsic dimension of the QOAFL data), satisfaction
with supervisor, is assigned to the leadership dimension of
the supplemental survey data.

Input variables to regression analysis of the
supplemental survey data were formed exactly as input
variables were formed for QOAFL data regression analysis:
by summing the responses to questions on job factors

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TABLE 4.14

Job Factor Counterparts

JOB FACTOR ON SUPPLEMENTAL SURVEY	COUNTERPART ON QOAFL SURVEYS
Recognition	Recognition
Job Freedom	Job Freedom
Satisfaction with Supervisor	Satisfaction with Leadership
Opportunities for Off-Duty Activities	Satisfaction with Free Time
Prestige	Prestige
Satisfaction with Pay and Benefits	Economic Standard

assigned to the same dimension. The following section presents the results of the supplemental survey data regression analysis.

Regression Analysis

Regression analysis of the supplemental survey data progressed just as regression analysis for the QOAFL data. First, job satisfaction and career intent regression models were formulated using the dimensions indicated by factor analysis as predictor variables. Next, job satisfaction and career intent models were built using the job factors in uncombined form. However, to reduce the

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multicollinearity of the predictor variables in the uncombined regression analysis, three pairs of the eighteen original job factors were added to form new indices: satisfaction with personal equipment and squadron equipment were added to form an overall equipment satisfaction index (EQUIP); satisfaction with relationships with peers and superiors were added to form an overall relationship with others index (RELATE); and job freedom and recognition were added to form an overall job enrichment index (JE). The correlation coefficients between questions used to form the above indices were .54, .39, and .40, respectively. Thus, fifteen predictor variables were input to the second set of regression equations.

The results of multiple linear regression using the four combined predictor variables indicated by factor analysis are shown in Figures 4.1 and 4.2. The following abbreviations and descriptions apply to the four predictor variables:

WKCOND = Work Conditions Dimension (arithmetic sum of satisfaction with recognition, job freedom, personal and squadron equipment, off-duty opportunities, prestige, meals, pay, recruiter information, and squadron policies);

WKATMOS = Work Atmosphere Dimension (arithmetic sum of satisfaction with relationships with peers and superiors, and working conditions);

LDRSHP = Leadership Dimension (arithmetic sum of satisfaction with supervisor and adequacy of training);

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WKHRS = Work Hours Dimension (arithmetic sum of
satisfaction with work schedule and time
spent on special duty commitments).

The working conditions dimension, obviously the most powerful of the four, entered both the job satisfaction and career intent regression equations first. The significance levels indicated the coefficients of the other three dimensions were not statistically different from zero ($\alpha > .05$).

The regression equations formed with the combined job factors did not provide new information pertaining to the relative importance of the job factors, but did support the rank-order indicated by Pearson correlation.

Further regression analysis was conducted using the job factors in uncombined form (except as previously noted). Figures 4.3 and 4.4 present the results.

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	WKCOND	.26	.379	.000

OVERALL MODEL: JSAT = 6.67 + .26(WKCOND)

VARIABLES NOT IN THE EQUATION: WKATMOS, LDRSHP, WKHRS, FACIL

FIGURE 4.1. Supplemental Survey Job Satisfaction Regression Model With Combined Factors As Predictor Variables.

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ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	WKCOND	.06	.270	.000

OVERALL MODEL: CI = 1.06 + .06(WKCOND)

VARIABLES NOT IN THE EQUATION: WKATMOS, LDRSHP, WKHRS, FACIL

FIGURE 4.2.   Supplemental Survey Career Intent Regression
Model With Combined Factors As Predictor
Variables.

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	JE	.61	.350	.000
(2)	TNG	.58	.404	.003
(3)	PREST	.42	.429	.031
(4)	SQDNPOL	.49	.444	.018
(5)	SPRVSN	-.40	.454	.036
(6)	SCHEDSAT	.38	.467	.049

OVERALL MODEL: JSAT = 5.39 + .61(JE) + .58(TNG) + .42(PREST)
+ .49(SQDNPOL) - .40(SPRVSN)
+ .38(SCHEDSAT)

VARIABLES NOT IN THE EQUATION: EQUIP, OFFDUTY, MEALS,
SPCLDTY, WEATHER, FACIL, PAY,
RCRTR, RELATE

FIGURE 4.3.   Supplemental Survey Job Satisfaction Regression
Model With Uncombined Job Factors As Predictor
Variables.

ORDER	VARIABLE	COEFFICIENT	R^2 FOR MODEL	COEFFICIENT SIGNIFICANCE
(1)	JE	.19	.284	.000
(2)	SQDNPOL	.18	.315	.001
(3)	WEATHER	-.16	.359	.001

OVERALL MODEL: CI = 1.50 + .19(JE) + .18(SQDNPOL) - .16(WEATHER)

VARIABLES NOT IN THE EQUATION: SCHEDSAT, SPRVSN, EQUIP, OFFDUTY, PREST, TNG, MEALS, SPCLDTY, FACIL, PAY, RCRTR, RELATE

FIGURE 4.4. Career Intent Regression Model With Uncombined Job Factors As Predictor Variables.

Overall, Figures 4.3 and 4.4 also support the Pearson correlation rank-ordering of the job factors. The regression analysis results using the fifteen job factors as predictor variables can not, however, be strictly interpreted. The negative signs associated with the coefficient of satisfaction with supervisor in the job satisfaction model and with the coefficient of satisfaction with working outdoors in the career intent model indicate that the predictor variables are multicollinear, and no real conclusions can be drawn. It is noted, however, that the models in Figures 4.3 and 4.4 include job factors from two or more of the dimensions identified by factor analysis.

Summary

This chapter has presented the statistical analysis of the supplemental survey data collected during June, 1981. The supplemental survey questionnaire was developed to measure WSS job satisfaction, career intent, and satisfaction with numerous job factors, some of which are unique to the Security Police career field. Two hundred fifteen WSS Specialists responded to the questionnaire.

Pearson correlation, factor analysis, and multiple linear regression were used to determine which of the eighteen job factors included on the questionnaire have significant impact on WSS job satisfaction and career intent. Pearson correlation suggested the rank-ordered lists of job factors shown in Tables 4.9 and 4.10. The lists are highly similar, but reflect at least three important generalities: (i) of the job factors included, job freedom, recognition, meals, prestige, and squadron policies significantly impact both job satisfaction and career intent; (ii) the jobs done by recruiters have lasting impact on WSS Specialists; (iii) working outdoors, hypothesized to be a major source of job dissatisfaction and incentive to change jobs, does not significantly impact either job satisfaction or career intent (this implication may be biased, however, by the facts that the survey was conducted during the summer months and approximately only one-third of the survey participants were assigned to "cold weather" bases).

Factor analysis of the eighteen job factors revealed four underlying job dimensions, which were named the work environment, work atmosphere, leadership, and work hours dimensions. The factor analysis of the supplemental survey data was not quite as successful as for the QOAFL data, however. The lack of clear-cut dimensions (some job factors loaded moderately onto multiple dimensions) resulted in multicollinearity among the "master" predictor variables formed for input to multiple linear regression.

Although the success of multiple linear regression was somewhat limited by multicollinearity, the results did support the results of the Pearson correlation analysis. Just as for the QOAFL data, regression equations were formed for job satisfaction and career intent by first using the predictor variables formed through factor analysis, and second by using the original set of uncombined job factors as predictor variables. The job satisfaction regression models for both the QOAFL data and supplemental survey data have higher R^2-values than the career intent models.

The next chapter presents the results of trend analysis, the final step in this research project. Analysis of variance and the T-test of means were statistical tools used to investigate trends in WSS job satisfaction and career intent from 1975 to 1981.

CHAPTER 5

TREND ANALYSIS

The purpose of this chapter is to present the results
of analysis of trends in WSS job satisfaction, career intent,
and satisfaction with job factors common to the QOAFL and
supplemental surveys (listed in Table 4.14). Analysis of
variance and the T-test of means were the statistical tools
used in the analysis. Simple (one treatment, or "one-way")
analysis of variance was conducted for job satisfaction and
career intent by yeargroup, and to investigate the impact of
grade, race, and MAJCOM on job satisfaction and career intent,
two-way analysis of variance was used. When analysis of
variance indicated significant changes in the dependent
variable, the T-test of means was used to determine when
the significant changes occured. The T-test of means was
also used to study the changes in the six common job factors.
Prior to presenting the results of the trend analysis, the
statistical tests used are described in more detail.

Analysis of Variance

As stated in Chapter 2, analysis of variance yields
estimates of how much of the variation in a set of data can
be attributed to certain causes (treatments) and how much
can be attributed to chance (random error).

In the one-way model, analysis of variance tests the
effects of a single treatment (yeargroup, in this research)
on the dependent variable. Similar in concept to the re-
gression model, the analysis of variance model is

$$y_{ij} = u + T_j + e_{ij}$$

where: y_{ij} = actual value of the dependent variable
(ith observation of the jth level of
treatment);

u = grand mean of all observations;

T_j = effect of the jth level of treatment;

e_{ij} = random error term.

In analysis of variance, the F-statistic is used to
determine whether the treatment effects on the dependent
variable are significant. To compute the F-statistic, the
total variance in the deptndent variable (SST) is first
divided into two parts: the sum of squares between groups
(SSB), and the sum of squares within groups (SSW). Thus,
the sum of squares total is

$$SST = SSB + SSW.$$

SSB is the amount of variance explained by the treatment
effects, and SSW is the amount of unexplained variance. The
second step in calculating the F-statistic is to divide SSB
and SSW by the appropriate number of degrees of freedom.
For SSB, the number of degrees of freedom is equal to the

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number of levels of treatment minus one; for SSW, the number
of degrees of freedom is equal to the number of observations
minus the number of treatment levels. The resultant values,
called "mean squares", are used to compute the ratio called
the F-statistic (this ratio follows the F-distribution)(7:491).
In equation form,

$$MSB = \frac{SSB}{J-1} \; ; \quad MSW = \frac{SSW}{n-J} \; ; \quad F = \frac{MSB}{MSW}$$

where "J" represents the number of levels of treatment and
"n" represents the number of observations.

As the F-statistic increases, the probability that
the treatment effect is significant increases. In following
tables, the significance levels reported indicate the proba-
bility that the treatment effects are negligible; that T_j is
equal to zero for all $j = 1,...J$ (7:494). The acceptance
level used in previous analysis ($\alpha \leq .05$) is also adopted for
the analysis of variance.

The model for two-way analysis of variance is

$$Y_{ijk} = u + T_{1_j} + T_{2_k} + (T_1 T_2)_{jk} + e_{ijk}$$

where Y_{ijk} = value of the dependent variable (ith
observation of the jth level of the
first treatment and the kth level of
the second treatment);

T_{1_j} = effect of the jth level of the first
treatment;

T_{2_k} = effect of the kth level of the second
treatment;

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$(T_1 T_2)_{jk}$ = interaction effect associated with the particular combination of the jth and kth levels of the first and second treatments; and

e_{ijk} = random error term.

The F-statistic is also used in two-way analysis of variance to determine whether either of the treatments or the interaction effects are significant. The F-statistics for the two-way model are computed by first separating the total variance into four parts and dividing by the appropriate number of degrees of freedom. The total variance in the dependent variable is separated into the amount of variance explained by the first treatment (SSRows), the amount of variance explained by the second treatment (SSColumns), the amount of variance explained by the interaction effects (SSInteraction), and the unexplained variance (SSError). The sum of squares total (SST), then, is equal to

$$SST = SSRows + SSColumns + SSInteraction + SSError.$$

Three different F-statistics are computed to determine whether the effects of the first treatment, the second treatment, or the interaction of the treatments are significant. Figure 5.1 shows how the F-statistics for two-way analysis of variance are calculated.

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$$\text{FIRST TREATMENT:} \quad \text{MSRows} = \frac{\text{SSRows}}{J-1} \; ; \quad \text{MSError} = \frac{\text{SSError}}{JK(n-1)} \; ;$$

$$F_{T_1} = \frac{\text{MSRows}}{\text{MSError}} \; .$$

$$\text{SECOND TREATMENT:} \quad \text{MSColumns} = \frac{\text{SSColumns}}{K-1} \; ; \quad F_{T_2} = \frac{\text{MSColumns}}{\text{MSError}} \; .$$

$$\text{INTERACTION:} \quad \text{MSInteraction} = \frac{\text{SSInteraction}}{(J-1)(K-1)}$$

$$F_I = \frac{\text{MSInteraction}}{\text{MSError}} \; .$$

FIGURE 5.1. Calculation of F-Statistics for Two-Way Analysis of Variance.

Just as the F-statistic for the one-way model, the probability that the associated effects are significant increase as the F-statistics increase, and the significance levels reported in following pages reflect the probability that the associated effects are negligible.

T-test of Means

The T-test of means was used extensively by Captain Peter E. King, whose work in comparing all Security Police responses to the 1975 and 1977 QOAFL surveys is discussed in Chapter 1. The T-test can help identify significant differences in a parameter mean between two groups. The groups in this case are the 1975, 1977, and 1981 survey respondents, and the possible parameters are job satisfaction,

career intent, and the six job factors common to all three surveys. To test whether the difference in the parameter means for two groups is statistically significant, the value of the t-statistics is computed using the following formula:

$$t = \frac{\left(\bar{x}_1 - \bar{x}_2\right) - \left(u_1 - u_2\right)}{\left[\left(\frac{n_1-1}{n_1+n_2-2} s_1^{2} + \frac{n_2-1}{n_1+n_2-2} s_2^{2}\right)\left(\frac{1}{n_1} + \frac{1}{n_2}\right)\right]^{\frac{1}{2}}}$$

where:

x_1 = parameter mean for the first group;

x_2 = parameter mean for the second group;

$u_1 - u_2$ = hypothesized difference between the true means (in this research, the hypothesized difference is zero);

n_1, n_2 = sample sizes (number of observations) for the two groups;

s_1, s_2 = sample standard deviations

The t-statistic follows the student's t-distribution with $n_1 + n_2 - 2$ degrees of freedom. In general, as the sample sizes and the value of t increase, the probability that the difference between the means is significant increases, which leads tc the conclusion that the true mean of the parameter for one group is significantly different than the true mean of the parameter for the other group. In following analysis, the same acceptance level ($\alpha \leq .05$) is used.

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Job Satisfaction Trends

One-way analysis of variance with yeargroup as the treatment shows that the overall job satisfaction mean for at least one yeargroup is significantly different from the job satisfaction mean for at least one other yeargroup. Table 5.1 shows the results of the analysis of variance and t-tests of differences in the means of adjacent yeargroups (1975 and 1977; 1977 and 1981). The immediate conclusion drawn is that overall WSS job satisfaction significantly increased from 1975 to 1981.

Further trend analysis was conducted by including various demographic factors as second treatments (yeargroup was always included as the first treatment). The demographic factors included were grade, race, and MAJCOM, and the results are shown in following tables.

The analysis of variance with yeargroup and grade as treatments (Table 5.2) shows at least two (possibly more) grades historically differ significantly in job satisfaction. Unfortunately, two-way analysis of variance does not reveal which pairs have differed significantly since 1975, but it is hypothesized that, in general, individuals in lower enlisted grades have been less job-satisfied than individuals in higher enlisted grades. This hypothesis is formulated from cross-tabulation of job

satisfaction scores by grade and yeargroup, shown in Table 5.3. The cross-tabulation shows the mean job satisfaction scores for responders of the same grade.

The analysis of variance results with yeargroup and race as treatments (Table 5.4) indicate that, with 94.8 percent certainty ($\alpha = .052$), at least two races differ significantly in job satisfaction mean. Again, analysis of variance does not indicate which pairs significantly differ, but as the cross-tabulation of job satisfaction means by yeargroup and race (Table 5.5) indicates, whites tend to be more job-satisfied than other races. For the analysis of variance, American Indian, Asian, and Spanish respondents were included in the "other" category.

The results of analysis of variance of job satisfaction with yeargroup and MAJCOM are displayed in Table 5.6. WSS job satisfaction means of at least two MAJCOMs differed significantly from 1975 to 1981. The cross-tabulation of job satisfaction means by yeargroup and MAJCOM, shown in Table 5.7, reveals that TAC WSS Specialists have consistently indicated greater job satisfaction than WSS Specialists in MAC and SAC. TAC does not necessarily have the absolute highest job satisfaction mean, however; all WSS respondents not assigned to MAC, SAC, or TAC were included in the "other" category. It is conceivable that one of those other commands could exhibit a higher WSS

TABLE 5.1

Job Satisfaction Trend: Analysis of Variance
and T-Test of Means Results

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARE	F-STAT.	SIGNIF.
Between Groups	2	114.03	3.842	.022
Within Groups	528	29.68		
Total	530			

YEARGROUP	n	JSAT MEAN	STANDARD DEVIATION	t-STAT.	SIGNIF.
1975	177	15.11	5.72		
1977	149	16.45	5.64	-2.13	.020
1981	205	14.91	5.05	2.69	.004

TABLE 5.2

Analysis of Variance: Job Satisfaction By Yeargroup and Grade

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	103.04	3.75	.024
Grade	8	134.96	4.91	.001
Interaction	13	46.56	1.70	.059
Error	501	27.47		
TOTAL	524	29.85		

CATEGORY	n	DEVIATION FROM GRAND MEAN (G.M.=15.43)
1975	173	-.20
1977	147	+.95
1981	205	-.51
SMSgt/CMSgt	8	+3.20
MSgt	10	+3.77
TSgt	40	+1.02
SSgt	129	-.54
Sgt	113	-1.66
SrA	96	-.06
A1C	94	+.36
Amn	25	+3.73
AB	10	+3.07

TABLE 5.3

Cross-Tabulation: Job Satisfaction Means
By Grade

MEAN (n)	YEARGROUP		
GRADE	1975	1977	1981
CMSgt	21.00 (1)	18.29 (7)	-----
SMSgt	-----	19.86 (7)	-----
MSgt	19.89 (9)	17.18 (11)	18.43 (7)
TSgt	17.44 (16)	19.06 (16)	18.21 (14)
SSgt	17.48 (25)	16.38 (21)	14.75 (28)
Sgt	13.42 (48)	14.31 (32)	13.75 (33)
SRA	-----	-----	14.06 (51)
A1C	14.32 (57)	15.63 (46)	14.54 (63)
Amn	14.63 (16)	16.90 (10)	21.17 (6)
AB	21.00 (3)	-----	15.33 (3)

TABLE 5.4

Analysis of Variance: Job Satisfaction By
Yeargroup and Race

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	107.05	3.62	.028
Race	2	87.88	2.97	.052
Interaction	4	14.27	.48	.749
Error	519	29.60	1.94	
TOTAL	527	30.03		

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CATEGORY	n	DEVIATION FROM GRAND MEAN (GM = 15.41)
1975	176	-.32
1977	149	+1.04
1981	203	-.48
Black	86	-.54
White	392	+.32
Other	50	-1.57

TABLE 5.5

Cross-Tabulation: Job Satisfaction Means By Race

MEAN (n) RACE	1975	1977	1981
BLACK	14.90 (30)	15.05 (21)	14.74 (35)
SPANISH	13.00 (3)	16.67 (6)	13.56 (9)
AMERICAN INDIAN	13.00 (6)	16.00 (1)	14.00 (7)
ASIAN	21.50 (2)	-----	-----
WHITE	15.52 (128)	16.50 (115)	15.10 (150)
OTHER	11.33 (9)	14.63 (8)	14.50 (2)

TABLE 5.6

Analysis of Variance: Job Satisfaction By Yeargroup and MAJCOM

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	79.08	2.71	.067
MAJCOM	3	112.89	3.87	.009
Interaction	4	40.41	1.39	.238
Error	519	29.16		
TOTAL	528	30.03		

CATEGORY	n	DEVIATION FROM GRAND MEAN (GM = 15.40)
1975	177	-.29
1977	147	+1.03
1981	205	-.49
MAC	25	-.04
SAC	277	-.80
TAC	111	+1.06
OTHER	116	+.91

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TABLE 5.7

Cross-Tabulation: Job Satisfaction Means By MAJCOM

MEAN (n) MAJCOM	1975	1977	1981
MAC	12.85 (13)	18.08 (12)	-----
SAC	14.80 (86)	14.81 (59)	14.35 (134)
TAC	16.00 (16)	18.20 (24)	15.97 (71)
OTHER	15.89 (64)	16.91 (55)	-----

job satisfaction mean. SAC WSS Specialist job satisfaction responses consistently averaged lowest of the categories shown.

Career Intent Trends

WSS career intent was analyzed exactly as job satisfaction was analyzed. One-way analysis of variance, shown in Table 5.8, indicates the career intent means of at least two yeargroups differ significantly. T-tests of means, also in Table 5.8, show that the 1977 career intent mean is significantly higher than the 1975 mean, and the 1981 mean is significantly lower than the 1977 mean.

TABLE 5.8

Career Intent Trend: Analysis of Variance And
T-Test of Means Results

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Between Groups	2	9.80	5.02	.007
Within Groups	541	1.95		
TOTAL	543			

YEARGROUP	n	CI MEAN	STANDARD DEVIATION	t-STAT.	SIGNIF.
1975	179	3.15	1.44		
1977	151	3.35	1.51	-1.23	.200
1981	214	2.89	1.27	3.15	.001

Two-way analysis of variance results and cross-
tabulations of career intent with yeargroup and demographic
factors are shown in Tables 5.9 through 5.14. Analysis of
variance with yeargroup and grade as treatments, shown in
Table 5.9, indicates interaction between the treatments is
significant. The magnitude and direction of yeargroup
effects is different for various grades. The presence of
interaction subtracts from the importance of the tests for
significance of the main effects alone (7:508). The cross-
tabulation of career intent means by yeargroup and grade,

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shown in Table 5.10, reveals that the career intent mean decreased from 1975 to 1977 for each grade, but between 1977 and 1981, career intent mean increased for WSS Specialists in the grades of Sergeant, Airman First Class, and Airman, but decreased for Master Sergeants, Technical Sergeants, and Staff Sergeants.

The results of analysis of variance for career intent with yeargroup and race are shown in Table 5.11. Yeargroup effects are significant, but difference in race did not account for a significant amount of the variance in career intent mean. Also, yeargroup and race did not interact to affect career intent. Cross-tabulation of career intent mean by yeargroup and race is displayed in Table 5.12. Just as for analysis of variance of job satisfaction, Spanish, American Indian, and Asian WSS respondents were included in the "other" category.

The final two-way analysis of variance was for career intent with yeargroup and MAJCOM as treatments. The results, shown in Table 5.13, indicate that both treatments were significant, and no interaction was present. The cross-tabulation of career intent by yeargroup and MAJCOM is shown in Table 5.14. TAC WSS Specialists consistently averaged higher career intent scores than WSS Specialists in SAC and MAC. It is possible, however, that WSS Specialists in commands included in the "other" category have career intent means higher than TAC or lower than SAC.

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TABLE 5.9

Analysis of Variance: Career Intent By
Yeargroup and Grade

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	15.18	12.20	.001
Grade	8	21.47	17.25	.001
Interaction	13	17.98	14.45	.001
Error	514	1.24		
TOTAL	537	1.98		

CATEGORY	n	DEVIATION FROM GRAND MEAN (GM = 3.10)
1975	175	+.07
1977	149	+.23
1981	214	-.21
SMSgt/CMSgt	8	+1.77
MSgt	10	+1.20
TSgt	43	+.46
SSgt	132	-.47
Sgt	115	-.48
SrA	97	+.20
A1C	97	+.10
Amn	26	+1.28
AB	10	+.90

TABLE 5.10

Cross-Tabulation: Career Intent Means By Grade

MEAN (n) GRADE	1975	1977	1981
CMS	5.0 (1)	4.86 (7)	----
SMS	----	4.71 (7)	----
MSgt	5.0 (9)	4.73 (11)	4.57 (7)
TSgt	4.81 (16)	4.69 (16)	4.59 (17)
SSgt	4.24 (25)	4.10 (21)	3.31 (29)
Sgt	2.56 (48)	2.52 (31)	2.81 (36)
SrA	----	----	2.51 (58)
A1C	2.44 (57)	2.43 (46)	2.45 (65)
Amn	3.06 (16)	2.60 (10)	2.83 (6)
AB	3.67 (3)	----	2.33 (3)

TABLE 5.11

Analysis of Variance: Career Intent By
Yeargroup and Race

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	10.23	5.21	.006
Race	2	2.43	1.24	.292
Interaction	4	1.12	.57	.685
Error	532	1.97	1.84	
TOTAL	540	1.99		

CATEGORY	n	GRAND MEAN (GM = 3.10)
1975	178	+.05
1977	151	+.25
1981	212	-.22
Black	88	+.19
White	400	-.04
Other	53	+.01

TABLE 5.12

Cross-Tabulation: Career Intent Means By Race

MEAN (n) RACE	1975	1977	1981
BLACK	3.43 (30)	3.55 (20)	3.03 (38)
SPANISH	2.00 (3)	4.33 (6)	2.78 (9)
AMERICAN INDIAN	3.00 (6)	5.00 (1)	3.43 (7)
ASIAN	4.00 (2)	----	----
WHITE	3.14 (128)	3.27 (115)	2.83 (156)
OTHER	2.67 (9)	2.75 (8)	3.50 (2)

TABLE 5.13

Analysis of Variance: Career Intent By
Yeargroup and MAJCOM

SOURCE OF VARIANCE	DEGREES OF FREEDOM	MEAN SQUARES	F-STAT.	SIGNIF.
Yeargroup	2	6.63	3.43	.033
MAJCOM	3	7.18	3.71	.012
Interaction	4	.84	.43	.784
Error	532	1.93		
TOTAL	541	1.98		

CATEGORY	n	DEVIATION FROM GRAND MEAN (GM = 3.10)
1975	179	+.05
1977	149	+.24
1981	214	-.21
MAC	25	+.10
SAC	281	-.21
TAC	117	+.23
Other	119	+.26

TABLE 5.14

Cross-Tabulation: Career Intent Means By MAJCOM

MEAN (n) MAJCOM	1975	1977	1981
MAC	2.92 (13)	3.50 (12)	----
SAC	3.05 (86)	3.12 (58)	2.69 (137)
TAC	3.19 (16)	3.67 (24)	3.25 (77)
OTHER	3.33 (64)	3.38 (55)	----

Job Factor Trends

The T-test of means was used to analyze trends in the six job factors common to all three surveys. The results are shown in Table 5.15. All three possible comparisons were made: 1975 with 1977; 1977 with 1981; and 1975 with 1981. The 1981 mean values for recognition and job freedom were converted to the 1-5 scale used in the 1975 and 1977 surveys to allow comparison between the three yeargroups. The mean values were converted by using the "lever rule," as shown in Figure 5.2. Table 5.15, with the acceptance levels indicated, suggests the following trends:
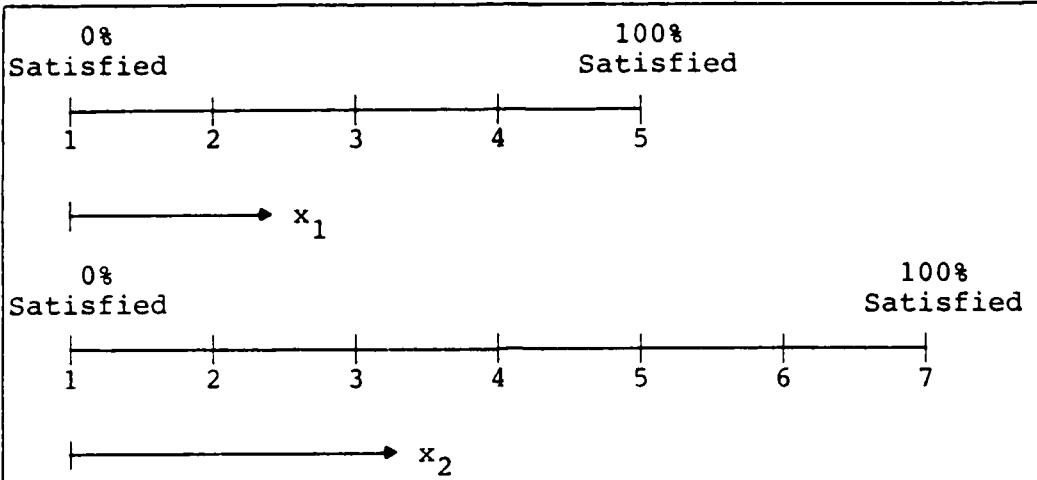
(1) Satisfaction with supervisors significantly increased from 1975 to 1981. The increase was so gradual that it was not detected as significant when adjacent yeargroups (1975 and 1977; 1977 and 1981) were compared.

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(2) Satisfaction with free time has not changed significantly since 1975. The very close free time satisfaction means for 1977 and 1981 indicate this job factor is very stable.

(3) Satisfaction with recognition for doing a job well significantly decreased from 1977 to 1981. The 1981 level is not, however, significantly lower than the 1975 level.

(4) Satisfaction with job freedom also significantly decreased from 1977 to 1981. The 1981 level is comparable to the 1975 level.

(5) The prestige job factor mean significantly increased from 1975 to 1977, but then plunged to a 1981 level significantly lower than the 1975 level.

(6) Satisfaction with pay did not change from 1975 to 1977, but significantly decreased from 1977 to 1981.

Some of the difference in the job factor means may be attributable to the following facts:

(1) the 1977 data is skewed relative to the 1975 and 1981 data as described in Chapter 3;

(2) only Master Sergeants and below performing flight security duty participated in the 1981 survey;

(3) the questions were worded differently on the QOAFL and supplemental surveys;

(4) the questions did not appear in the same order on all three surveys; and

(5) the scales of measurement for satisfaction with job freedom and recognition ranged from one to seven on the supplemental survey and ranged from one to five on the QOAFL surveys.

For these reasons, a more strict acceptance level ($\alpha \leq .01$) was used in interpreting the results.

0%
Satisfied

100%
Satisfied

1 2 3 4 5

$\longrightarrow$ x_1

0%
Satisfied

100%
Satisfied

1 2 3 4 5 6 7

$\longrightarrow$ x_2

LEVER RULE:
$$\frac{x_1}{\ell_1} = \frac{x_2}{\ell_2}$$

$x_1 = u-1; \; x_2 = u^*-1 \;\; (u^* = \text{"converted" mean})$

$\ell_1 = 7-1 = 6$

$\ell_2 = 5-1 = 4$

$\therefore \; u^* = \ell_2 \dfrac{u-1}{l_1} + 1 = \dfrac{2}{3}(u-1) + 1$

FOR RECOGNITION: $u^* = \dfrac{2}{3}(3.29-1) + 1 = \underline{\underline{2.53}}$

FOR JOB FREEDOM: $u^* = \dfrac{2}{3}(3.75-1) + 1 = \underline{\underline{2.83}}$

CHECK: Neutral score on 1-7 scale should equal neutral
score on the 1-5 scale.

$3 \overset{?}{=} \dfrac{2}{3}(4-1) + 1$

$3 = 3 \;\; \checkmark$

FIGURE 5.2. Conversion of Recognition and Job Freedom Means
Using The Lever Rule.

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TABLE 5.15

T-Test of Means For Job Factors Common to QOAFL and Supplemental Surveys

JOB FACTOR	MEAN STANDARD DEVIATION NUMBER OF CASES			t-STATISTIC SIGNIFICANCE		
	1975	1977	1981	75-77	77-81	75-81
Satisfaction with Supervision	3.99 1.65 172	4.36 1.91 144	4.60 1.89 212	1.85 .033	1.17 .121	3.33 .000
Free Time Satisfaction	3.65 1.90 174	4.06 1.71 145	3.98 1.91 214	2.01 .022	-.41 .341	1.70 .045
Satisfaction with Recognition	2.88 1.26 173	3.04 1.17 143	2.53 1.96 214	1.16 .123	2.79 .003	2.03 .021
Satisfaction with Job Freedom	3.01 1.22 173	3.31 1.30 143	2.83 1.92 213	2.11 .017	2.61 .005	1.07 .142
Satisfaction with Prestige	3.96 1.84 173	4.55 1.61 143	3.23 1.92 212	3.00 .001	6.77 .000	3.78 .000
Satisfaction with Pay	3.80 1.66 175	3.79 1.50 145	2.92 1.87 215	.06 .476	4.68 .000	4.68 .000

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Summary

This chapter presented the results of analysis of trends from 1975 to 1981 in WSS job satisfaction, career intent, and six job factors common to the QOAFL and supplemental surveys. One-way and two-way analysis of variance and the T-test of means were the primary statistical tools used in analyzing trends. Cross-tabulations of job satisfaction and career intent by yeargroup and grade, yeargroup and race, and yeargroup and MAJCOM were used to help establish conclusions concerning the effects of those demographic factors.

Job satisfaction significantly increased from 1975 to 1977, and then decreased from 1977 to 1981. Grade, race, and MAJCOM all show significant affects on the level of WSS job satisfaction. Using mean squares as a criterion, grade is the most important demographic factor, MAJCOM is the second most important, and race is the third most important. Also, race effects are not as statistically significant as are grade and MAJCOM. Significance of the F-statistic is .052 for race, as compared to .001 for grade and .009 for MAJCOM.

Career intent also increased significantly from 1975 to 1977 and then decreased from 1977 to 1981. Grade and MAJCOM account for significant amounts of the variance in career intent scores, but race does not. Interaction

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between yeargroup and grade makes it difficult to conclude whether grade or MAJCOM is the more important demographic factor in terms of explaining career intent variance.

Possibly of concern to decision makers is that job satisfaction and career intent scores tend to "sag" for WSS Specialists in the grades of Airman First Class, Senior Airman, Sergeant, and Staff Sergeant. More junior and more senior enlisted WSS Specialists tend to be more job-satisfied and average higher career intent scores.

Satisfaction with most of the six job factors common to all three surveys declined from 1977 to 1981. Only satisfaction with leadership/supervision significantly increased. Satisfaction with free time is the only job factor which has not changed significantly since 1975. Satisfaction with prestige, recognition, job freedom, and pay all decreased significantly since 1977. The satisfaction with pay decline was probably caused by annual inflation rates which were well above annual pay increases. The causes of change or lack of change in the remainder of the common job factors are not obvious.

Investigation of trends was the last major data analysis conducted. Chapter 6 summarizes the entire research effort and reiterates general conclusions drawn from the data analyses.

CHAPTER 6

SUMMARY AND CONCLUSIONS

The purpose of this chapter is to summarize the entire research effort and to reiterate conclusions drawn in foregoing chapters. Details of statistical analysis, methodology, and definitions of terms are included in previous chapters.

Background

This research attempts to rank job factors in order of impact on job satisfaction and career intent of Weapons Systems Security Specialists within the Security Police career field. Review of available literature indicated data on WSS job satisfaction and career intent collected via the Quality of Air Force Life (QOAFL) surveys had not been analyzed to rank-order the included job factors. The WSS responses to the 1975 and 1977 QOAFL surveys formed part of the overall data base.

Collection of additional WSS job satisfaction and career intent data via a supplemental survey conducted during June, 1981 allowed investigation of WSS job satisfaction and career intent trends and rank-ordering of job factors more unique to Weapons Systems Security. The supplemental survey data formed the final part of the data base.

Statistical methods used to rank job factors in order
of impact on job satisfaction and career intent were Pearson
correlation, factor analysis, and multiple linear regression.
Statistical methods used to analyze trends were one-way and
two-way analysis of variance and the T-test of means.
Except for some of the trend analysis presented in Chapter 5,
the accepted level of risk was $\alpha \leq .05$. Following sections
summarize the results of application of the statistical
tools to the data base.

Rank-Order of Job Factors

The set of eighteen job factors on the supplemental
survey included only six of the twelve job factors on the
QOAFL surveys. Tables 6.1 and 6.2 show the rank-ordered
lists of job factors for the QOAFL surveys and for the
supplemental survey. Tables 6.1 and 6.2 also include the
less important job factors. Pearson correlation was most
helpful in establishing the rank-ordered lists; factor
analysis, coupled with multiple linear regression, supported
the rank-order suggested by Pearson correlation.

Dimensionality of the Data Base

Factor analysis of the job factors on the survey
identified underlying dimensions of the survey data. Results
of factor analysis of the job factors on the QOAFL surveys
are shown again in Table 6.3. The twelve QOAFL job factors
measure Intrinsic, Job Enrichment, and Economic dimensions.

Table 6.4 presents the results of factor analysis of
the eighteen supplemental survey job factors. The supple-
mental survey job factors collectively measure four separate
dimensions: Working Conditions, Work Atmosphere, Leadership,
and Work Hours.

Trend Analysis

As shown in Chapter 5, WSS job satisfaction and
career intent significantly changed from 1975 to 1981. In
1977, WSS Specialists were more job-satisfied and expressed
greater career intent than in 1981. Figure 6.1 shows the
job satisfaction index means of WSS responses to the 1975,
1977, and 1981 surveys. Figure 6.2 shows the career intent
index means of WSS responses to the surveys. Trend analysis
was also conducted for the six job factors included in both
the QOAFL and supplemental surveys. Figure 6.3 displays
the means of each index for 1975, 1977, and 1981. Leader-
ship satisfaction significantly increased from 1975 to 1981;
satisfaction with recognition, job freedom, prestige, and
pay significantly decreased from 1977 to 1981.

Discussion and Recommendations

An important caveat is that job factors not found to
be significantly associated with WSS job satisfaction or
career intent may indeed be significantly associated with
other areas such as job performance or absenteeism. Also,

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TABLE 6.1

Rank-Order of Job Factors By Impact on WSS
Job Satisfaction

ORDER	QOAFL SURVEY JOB FACTORS	SUPPLEMENTAL SURVEY JOB FACTORS
1.	Work Satisfaction	Job Freedom
2.	Challenge	Recognition
3.	Satisfaction with Leadership	Meals
4.	Prestige	Prestige
5.	Growth	Squadron Policies
6.	Feedback	Training
7.		Satisfaction with Leadership
	NOT RANKED	NOT RANKED
	Job Freedom	Relationships with Superiors
	Equity	Schedule Satisfaction
	Recognition	Relationships with Peers
	Free Time	Facilities
	Economic Standard	Special Duty Commitments
	Economic Security	Free Time
		Squadron Equipment
		Personal Equipment
		Satisfaction with Pay
		Recruiter Information
		Working outdoors

TABLE 6.2

Rank-Order of Job Factors By Impact on
WSS Career Intent

ORDER	QOAFL SURVEY JOB FACTORS	SUPPLEMENTAL SURVEY JOB FACTORS
1.	Equity	Job Freedom
2.	Work Satisfaction	Recognition
3.	Prestige	Meals
4.	Growth	Squadron Policies
5.	Challenge	Prestige
6.	Job Freedom	Schedule Satisfaction
	NOT RANKED	NOT RANKED
	Satisfaction with Leadership	Squadron Equipment
	Feedback	Personal Equipment
	Recognition	Recruiter Information
	Free Time	Off-Duty Activities
	Economic Standard	Satisfaction with Pay
	Economic Security	Special Duty Commitments
		Facilities
		Relationships with Superiors
		Relationships with Peers
		Satisfaction with Supervision
		Training
		Working outdoors

TABLE 6.3

Dimensionality of QOAFL Survey Job Factors

INTRINSIC DIMENSION	JOB ENRICHMENT DIMENSION	ECONOMIC DIMENSION
Work Satisfaction Challenge Sat with Leadership Equity Prestige Growth Free Time	Feedback Recognition Job Freedom	Economic Security Economic Standard

TABLE 6.4

Dimensionality of Supplemental Survey Job Factors

| WORKING CONDITIONS DIMENSION	WORK ATMOSPHERE DIMENSION
Recognition Job Freedom Personal Equipment Squadron Equipment Off-Duty Activities Prestige Meals Satisfaction with Pay Recruiter Information Squadron Policies	Relationships with Peers Relationships with Superiors Working Outdoors
LEADERSHIP DIMENSION	WORK HOURS DIMENSION
Satisfaction with Supervision Training	Schedule Satisfaction Special Duty Commitments

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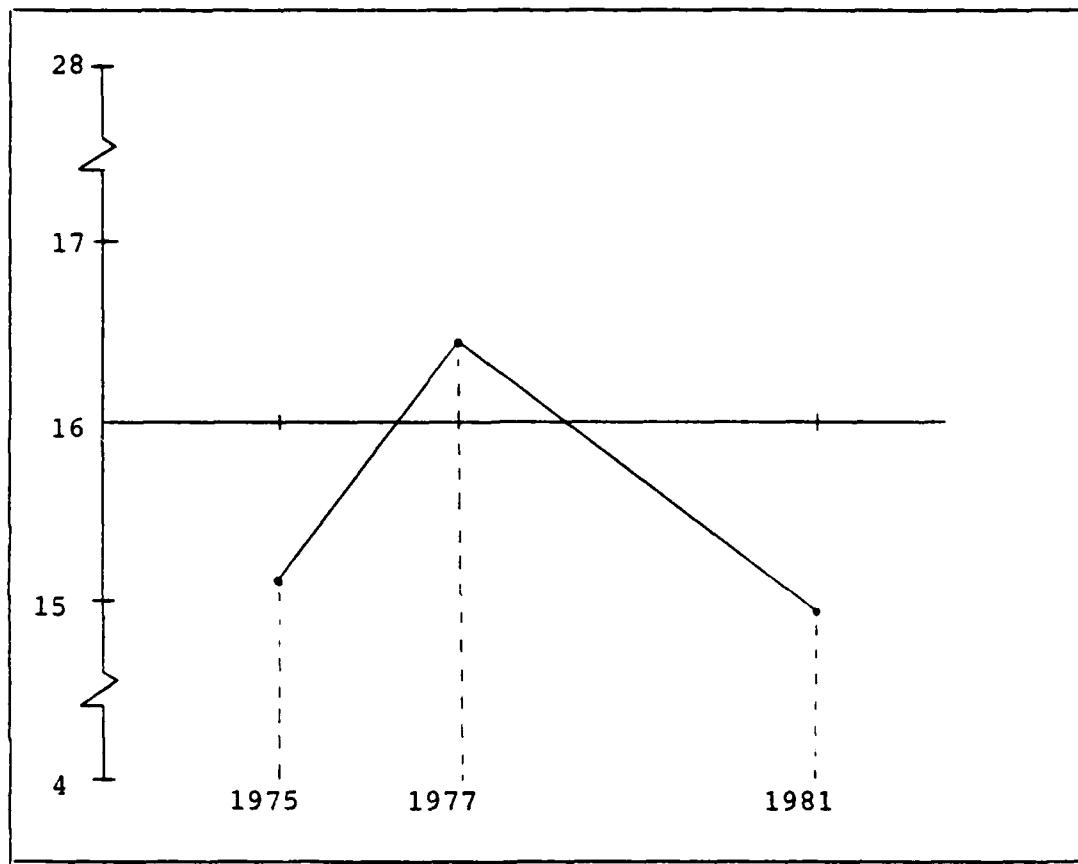
FIGURE 6.1.   WSS Job Satisfaction Trend, 1975-1981
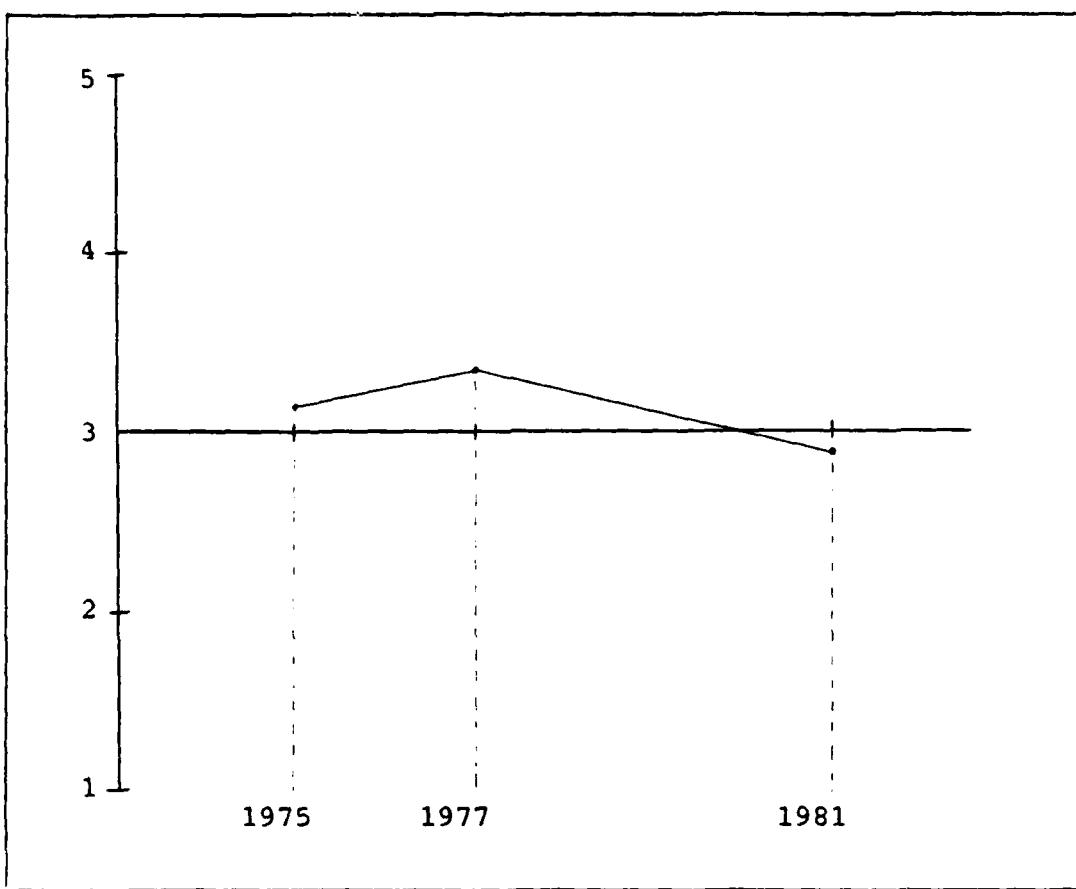
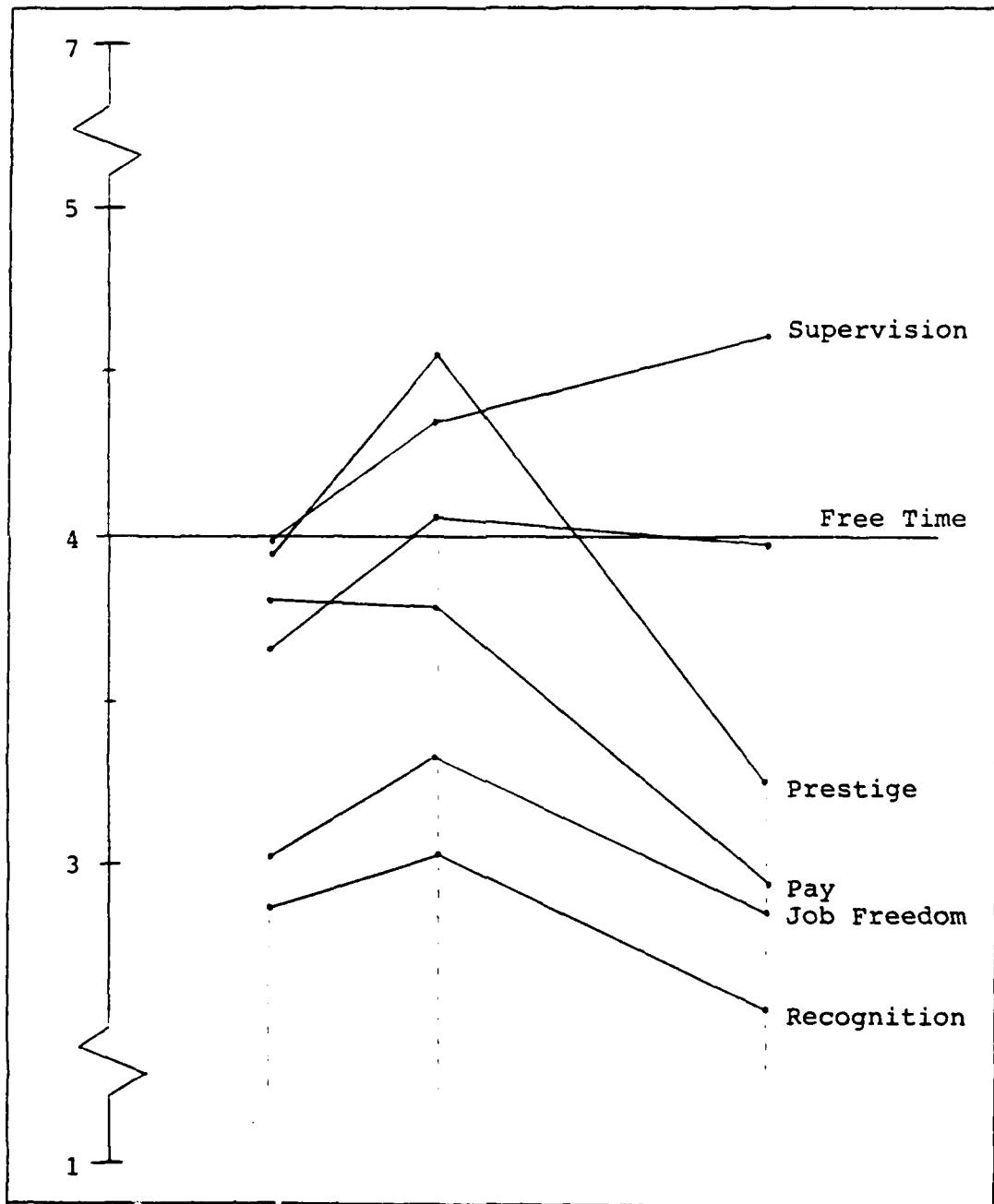FIGURE 6.2. WSS Career Intent Trends, 1975-1981

FIGURE 6.3.   WSS Job Factor Trends, 1975-1981

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the job factors are multicollinear; a change in one job factor can be associated with changes in satisfaction with one or several other job factors.

Survey data can be an important source of feedback to decision makers. Trend analysis can illustrate the long-run effects of known changes. Surveys should continue to be administered periodically to WSS Specialists of the SP career field. Although approximately 20,000 Security Policemen are WSS Specialists, accurate results may be obtained by surveying only approximately one percent of the population. Many WSS Specialists, however, do not have confidence that attitude and opinion surveys are seriously considered by decision makers. Seventy-five of 215 respondents to the supplemental survey provided written comments. Of those, thirty included the question or criticism, "Will it do any good?" If data and information obtained directly from the field are not used as part of the basis for decision making, surveys can become ineffective and perhaps harmful to the health of the career field.

APPENDIX A

SUPPLEMENTAL SURVEY QUESTIONNAIRE

DEPARTMENT OF THE AIR FORCE
AIR FORCE INSTITUTE OF TECHNOLOGY (ATC)
WRIGHT-PATTERSON AIR FORCE BASE, OH   45433

1. The attached questionnaire was prepared by a researcher at the Air Force Institute of Technology, Wright-Patterson AFB OH.   The purpose of the questionnaire is to gather information concerning factors which may influence job satisfaction among USAF Weapons System Security Specialists (811X0).

2. You are requested to provide an answer for each question.   Headquarters USAF Survey Control Number USAF SCN 81-45 has been assigned to this question- naire.   Your participation in this research effort is voluntary.

3. Your responses to these questions will remain confidential.   The informa- tion you provide will be instrumental in determining which job factors correlate most highly with job satisfaction of personnel within your career field.

CHARLES R. MARGENTHALER, Colonel, USAF   1 Atch
Dean   Questionnaire
School of Systems and Logistics

SURVEY CONTROL NUMBER: USAF SCN 81-45

EXPIRATION DATE: 30 JUN 81

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AIR FORCE—A GREAT WAY OF LIFE

SURVEY INSTRUCTIONS

1. Using a Number 2 pencil, please choose a single response for each question in the questionnaire booklet, and code your response onto the answer sheet provided. Be careful not to make any marks on the answer sheet other than your responses to the questions. It is not necessary to write your name on either the answer sheet or the questionnaire booklet.

2. Questions 1 through 9 ask for information about yourself such as grade and length of time in service. This information is needed to help draw conclusions about the differences among various groups categorized by factors such as major air command or work schedule.

3. Questions 10 through 36 ask for your attitude or opinion about a number of job-related factors. In addition to answering the questions, please feel free to add any written comments either on the reverse side of this page or on the questionnaire itself, and turn in your comments along with your answer sheet.

4. If, for any reason, you decide not to answer a particular question, simply leave the answer sheet blank for that question.

5. Your help in this survey effort is appreciated. Your responses to these questions will be influential in drawing conclusions about how various job factors influence the level of job satisfaction of USAF Weapons System Security Specialists.

1. What is your present active duty grade?

    A. MSgt   E. SrA
    B. TSgt   F. A1C
    C. SSgt   G. Amn
    D. Sgt   H. AB

2. How much total active federal military service have you
    completed?

    A. Less than one year   L. 11 years but less than 12
    B. 1 year but less than 2   M. 12 years but less than 13
    C. 2 years but less than 3   N. 13 years but less than 14
    D. 3 years but less than 4   O. 14 years but less than 15
    E. 4 years but less than 5   P. 15 years but less than 16
    F. 5 years but less than 6   Q. 16 years but less than 17
    G. 6 years but less than 7   R. 17 years but less than 18
    H. 7 years but less than 8   S. 18 years but less than 19
    I. 8 years but less than 9   T. 19 years but less than 20
    J. 9 years but less than 10   U. Over 20 years
    K. 10 years but less than 11

3. To what major air command are you assigned?

    A. MAC
    B. SAC
    C. TAC
    D. Other

4. What is your present level of education?

    A. Some high school (did not graduate)
    B. High school graduate
    C. Trade school or technical school (no college)
    D. Less than one year of college
    E. 1 year of college, but less than 2
    F. 2 years of college, but less than 3
    G. 3 years of college, but less than 4
    H. 4 years of college, or more, with no degree
    I. College degree (BS, BA, or equivalent)
    J. Graduate work beyond bachelor degree

5. What is your marital status?

    A. Married; spouse is _not_ a military member
    B. Married; spouse _is_ a military member
    C. Never been married
    D. Divorced (and not remarried)
    E. Separated
    F. Widowed

6. What is your racial or ethnic group?

    A. Black
    B. White (other than Spanish speaking origin)
    C. Spanish speaking origin (Cuban, Puerto Rican,
       Mexican-American, Spanish descent)
    D. American Indian
    E. Asian origin (Chinese, Japanese, Korean, Filipino,
       or Asian-American)
    F. Other (Please specify _____)

7. What is your present AFSC - skill level?

    A. 3 level
    B. 5 level
    C. 7 level

8. Where do you reside?

    A. On-base Government housing (not a dormitory)
    B. On-base Government dormitory
    C. I reside off-base

9. What is your normal work schedule?

    A. Permanent day shift
    B. Permanent swing shift
    C. Permanent midnight shift
    D. 3 swings, 3 mids, 3 days off ("6 and 3" schedule)
    E. 3 days, 3 swings, 3 mids, 3 days off ("9 and 3"
       schedule)
    F. 3 days of constant duty, followed by 3, 4, 5, or 6
       days off
    G. Rotating swing and midnight shifts (other than "6 and
       3")
    H. Rotating day, swing, and mid-shifts (other than "9
       and 3")
    I. Other

10. Which of the following best describes your attitude
    toward making the Air Force a career?

    A. Definitely intend to make the Air Force a career
    B. Most likely will make the Air Force a career
    C. Undecided
    D. Most likely will not make the Air Force a career
    E. Definitely do not intend to make the Air Force a
       career

11. At the time you came on active duty in the Air Force,
    which one of the following best describes the attitude
    you had toward making the Air Force a career?

    A. Definitely intended to make the Air Force a career
    B. Was inclined toward making the Air Force a career
    C. Was undecided
    D. Was not inclined toward making the Air Force a career
    E. Definitely did not intend to make the Air Force a
       career

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12. Which of the following best describes your attitude
    toward retirement at twenty years of military service?

    A. Not applicable; I already have over 20 years of
       service
    B. Definitely will remain on active duty beyond 20 years
    C. Probably will remain on active duty beyond 20 years
    D. Undecided
    E. Probably will retire at or soon after reaching 20
       years
    F. Definitely will retire at or soon after reaching 20
       years
    G. I will probably leave the Air Force before reaching
       20 years of service
    H. I will definitely leave the Air Force before reaching
       20 years of service

13. When does your active duty commitment expire?

    A. No active duty service commitment
    B. In 1 year or less
    C. In greater than 1 year but less than 2 years
    D. In greater than 2 years but less than 3 years
    E. I have over 3 years of active duty service commitment
       remaining

14. How often do you think about quitting the Air Force?

    A. Never
    B. Rarely
    C. Sometimes
    D. Often
    E. Constantly

15. Which of the following shows how much of the time you
    feel satisfied with your job?

    A. All of the time
    B. Most of the time
    C. A good deal of the time
    D. About half of the time
    E. Occasionally
    F. Seldom
    G. Never

16. Choose one of the following statements which best tells how well you like your job.

A. I hate it
B. I dislike it
C. I don't like it
D. I am indifferent to it
E. I like it
F. I am enthusiastic about it
G. I love it

17. Which one of the following best tells how you feel about changing your job?

A. I would quit this job at once if I could
B. I would take almost any other job in which I could earn as much as I am earning now
C. I would like to exchange both my job and my occupation
D. I would like to exchange my job for another one within this career field
E. I am not eager to exchange my job, but I would do so if I could get a better job
F. I cannot think of any jobs for which I would exchange the job I have
G. I would not exchange my job for any other

18. Which one of the following shows how you think you compare with other people?

A. No one likes his job better than I like mine
B. I like my job much better than most people like theirs
C. I like my job better than most people like theirs
D. I like my job about as well as most people like theirs
E. I dislike my job more than most people dislike theirs
F. I dislike my job much more than most people dislike theirs
G. No one dislikes his job more than I dislike mine

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For questions 19-36, please indicate how satisfied or dis-
satisfied you are with each subject by selecting the appro-
priate letter on the scale following the question. The
scale ranges from HIGHLY DISSATISFIED to HIGHLY SATISFIED.
If the subject is not applicable to you, mark answer "H"
on your answer sheet. If you are undecided or neutral about
the subject, mark answer "D" on your answer sheet.

19. How satisfied are you with your regular work schedule?
    (Consider only scheduled duty hours; exclude overtime,
    recalls, appointments, etc.)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

20. How satisfied are you with the quality of supervision
    that you receive from your immediate supervisor?
    (Consider factors such as On-The-Job Training, counseling
    skills, his concern for your performance and well-being,
    etc.)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

21. How satisfied are you with the amount of recognition you
    receive for doing your job well?

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

22. How satisfied are you with the amount of freedom you
    have on the job? (Freedom to use your judgement and
    make decisions on job-related matters)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

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23. How satisfied are you with the equipment that the Air
    Force issues for your personal use on the job?
    (Includes helmet, gas mask, flashlight, foul weather
    gear, etc.)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

24. How satisfied are you with the squadron equipment that
    you use in the performance of your duties? (Includes
    vehicles, weapons, radios, etc.)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

25. How satisfied are you with the opportunities available
    to you for getting involved in off-duty activities
    such as hobbies, sports, education, etc?

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

26. How satisfied are you with the prestige associated with
    your job? (The respect you receive from others)

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

27. How satisfied are you with the adequacy of the training
    you receive?

    A........B........C........D........E........F........G

    HIGHLY   NEUTRAL OR   HIGHLY
    DISSATISFIED   UNDECIDED   SATISFIED

28. How satisfied are you with the meals you eat while you are on duty?

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

29. How satisfied are you with the amount of time you spend taking care of extra duty commitments such as recalls, overtime, military appointments, etc?

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

30. How satisfied are you with performing duty out of doors? (Exposure to weather conditions)

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

31. How satisfied are you with the facilities you work in? (Gate shacks, alert facilities, Central Security Control, towers, etc)

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

32. How satisfied are you with your military pay, allowances, and benefits?

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

33. How satisfied are you with the job done by your recruiter in supplying you with information about the Security Police career field?

A....,...B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

34. How satisfied are you with your squadron's policies, such as appointment system, newcomer orientation practices, guardmount procedures, etc.?

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

35. How satisfied are you with the relationship that you have with your peers? (People you work with who do the same tasks)

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

36. How satisfied are you with the relationship that you have with those who are senior in grade or who are in supervisory positions over you?

A........B........C........D........E........F........G

HIGHLY   NEUTRAL OR   HIGHLY
DISSATISFIED   UNDECIDED   SATISFIED

QUESTIONNAIRE CRITIQUE

***SPECIAL NOTE AND INSTRUCTIONS:** You are one of the first Weapons Systems Security Specialists to complete this survey. This survey is scheduled to be administered to many other WSS Specialists Air Force-wide. Before doing so, however, special feedback is needed from YOU to help ensure the survey questionnaire is accurate, complete, and well-written.

Based on the information you provide, the existing questionnaire will be changed so that future data collected will be highly reliable; that is, that future WSS responses will be truly representative of the career field as a whole.

Please provide your input by first reviewing each of the questions in the survey booklet. Then consider each of the following questions about the survey and write your comments in the space provided. Please be sure to turn in this critique along with your answer sheet. In your case, this page is just as important as the answer sheet itself. Again, it is not necessary to identify yourself, and you may keep the survey booklet. Thank you for your help in this research effort.

1. Were there any questions which were not clear? If so, please identify them by question number and, if possible, explain your uncertainty about the content of the question.

_____

_____

_____

2. Were there any questions which did not include your answer in the list of possible responses? Please identify them by question number and write your response. _____

_____

_____

3. Were there any questions about topics you were not familiar with? Please identify them by question number.

_____

_____

4.   Approximately how much time was required for you to complete the questionnaire? _____

5.   Please write any suggestions or comments you have concerning this questionnaire. _____
_____
_____
_____
_____
_____

APPENDIX B

SELECTED QUALITY OF AIR FORCE LIFE
SURVEY QUESTIONS

The following questions appeared on the 1975 and 1977 QOAFL surveys, and were used to form the indices described in Chapter 3. The first number in parentheses after each question is the question number on the 1975 QOAFL survey; the second is the question number on the 1977 QOAFL survey."

JOB SATISFACTION

1. Which of the following shows how much of the time you feel satisfied with your job? (65;57)

   A. All of the time
   B. Most of the time
   C. A good deal of the time
   D. About half of the time
   E. Occasionally
   F. Seldom
   G. Never

2. Choose one of the following statements which best tells how well you like your job. (66;58)

   A. I hate it
   B. I dislike it
   C. I don't like it
   D. I am indifferent to it
   E. I like it
   F. I am enthusiastic about it
   G. I love it

3. Which of the following best tells how you feel about changing your job? (67;59)

   A. I would quit this job at once if I could
   B. I would take almost any other job in which I could earn as much as I am earning now
   C. I would like to exchange both my job and my occupation
   D. I would like to exchange my job for another one within this career field
   E. I am not eager to exchange my job, but I would do so if I could get a better job
   F. I cannot think of any jobs for which I would exchange the job I have
   G. I would not exchange my job for any other

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4. Which of the following shows how you think you compare with other people? (68;60)

A. No one likes his job better than I like mine
B. I like my job much better than most people like theirs
C. I like my job better than most people like theirs
D. I like my job about as well as most people like theirs
E. I dislike my job more than most people dislike theirs
F. I dislike my job much more than most people dislike theirs
G. No one dislikes his job more than I dislike mine

CAREER INTENT

5. Which of the following best describes your attitude toward making the Air Force a career? (11;14)

A. Definitely intend to make the Air Force a career
B. Most likely will make the Air Force a career
C. Undecided
D. Most likely will not make the Air Force a career
E. Definitely do not intend to make the Air Force a career

ECONOMIC SECURITY: Guaranteed employment; retirement benefits; insurance; protection for self and family.

6. To what degree are you satisfied with the ECONOMIC SECURITY aspects of your life? (21;23)

A........B........C........D........E........F........G

Highly   Neutral   Highly
Dissatisfied   Satisfied

ECONOMIC STANDARD: Satisfaction of basic human needs such as food, shelter, clothing; the ability to maintain an acceptable standard of living.

7. To what degree are you satisfied with the ECONOMIC STANDARD aspects of your life? (19;21)

A........B ......C........D........E........F........G

Highly   Neutral   Highly
Dissatisfied   Satisfied

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WORK: Doing work that is personally meaningful and important;
pride in my work; job satisfaction; recognition for my efforts
and my accomplishments on the job.

8. To what degree are you satisfied with the WORK aspects
    of your life? (61;56)

    A........B........C........D........E........F........G

    Highly   Neutral   Highly
    Dissatisfied   Satisfied

FREE TIME: Amount, use and scheduling of free time alone, or
in voluntary association with others; variety of activities
engaged in.

9. To what degree are you satisfied with the FREE TIME
    aspects of your life? (37;52)

    A........B........C........D........E........F........G

    Highly   Neutral   Highly
    Dissatisfied   Satisfied

LEADERSHIP/SUPERVISION: My supervisor has my interests and
that of the Air Force at heart; keeps me informed; approachable
and helpful rather than critical; good knowledge of the job.

10. To what degree are you satisfied with the LEADERSHIP/
     SUPERVISION aspects of your life? (78;88)

     A........B........C........D........E........F........G

     Highly   Neutral   Highly
     Dissatisfied   Satisfied

11. What is your opinion of the quality of leadership in the
     Air Force? (79;90)

     A. Excellent
     B. Above average
     C. Average
     D. Below average
     E. Poor

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EQUITY: Equal opportunity in the Air Force; a fair chance at promotion; an even break in my job/assignment selections.

12. To what degree are you satisfied with the EQUITY aspects of your life? (110;137)

A.........B.........C.........D.........E.........F.........G

Highly   Neutral   Highly
Dissatisfied   Satisfied

13. An individual can get more of an even break in civilian life than in the Air Force. (117;138)

A. Strongly disagree
B. Disagree
C. Undecided
D. Agree
E. Strongly agree

PERSONAL GROWTH: To be able to develop individual capacities; education/training; making full use of my abilities; the chance to further my potential.

14. To what degree are you satisfied with the PERSONAL GROWTH aspects of your life? (123;144)

A.........B.........C.........D.........E.........F.........G

Highly   Neutral   Highly
Dissatisfied   Satisfied

PERSONAL STANDING: To be treated with respect; prestige; dignity; reputation; status.

15. To what degree are you satisfied with the PERSONAL STANDING aspects of your life? (131;153)

A.........B.........C.........D.........E.........F.........G

Highly   Neutral   Highly
Dissatisfied   Satisfied

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JOB FREEDOM

16. How often are you given the freedom you need to do your job well? (81;135)

    A. Never
    B. Seldom
    C. Sometimes
    D. Often
    E. Always

FEEDBACK

17. How often do you and your supervisor get together to set your personal performance objectives? (127;131)

    A. Never
    B. Seldom
    C. Sometimes
    D. Frequently
    E. Very frequently

18. How often are you given feedback from your supervisor about your job performance? (128;132)

    A. Never
    B. Seldom
    C. Sometimes
    D. Frequently
    E. Very frequently

RECOGNITION

19. How often does your immediate supervisor give you recognition for a job well done? (82;133)

    A. Never
    B. Seldom
    C. Sometimes
    D. Frequently
    E. Always

JOB CHALLENGE

20. How do you evaluate your present Air Force job?
     (62;68)

     A. Not at all challenging
     B. Not very challenging
     C. Somewhat challenging
     D. Challenging
     E. Very challenging

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